UNODC
United Nations Office on Drugs and Crime

UNODC Research

4

DRUG MARKET TRENDS

COCAINE
AMPHETAMINE-TYPE STIMULANTS
NEW PSYCHOACTIVE SUBSTANCES

WORLD DRUG REPORT 2022

© United Nations, June 2022. All rights reserved worldwide.
ISBN: 9789211483758
eISBN: 9789210019545
United Nations publication, Sales No. 22.XI.8

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. The United Nations Office on Drugs and Crime (UNODC) would appreciate receiving a copy of any publication that uses this publication as a source.

Suggested citation:
UNODC, World Drug Report 2022 (United Nations publication, 2022).

No use of this publication may be made for resale or any other commercial purpose whatsoever without prior permission in writing from UNODC. Applications for such permission, with a statement of purpose and intent of the reproduction, should be addressed to the Research and Trend Analysis Branch of UNODC.

DISCLAIMER

The content of this publication does not necessarily reflect the views or policies of UNODC or contributory organizations, nor does it imply any endorsement.

Comments on the report are welcome and can be sent to:

Research and Trend Analysis Branch
United Nations Office on Drugs and Crime
PO Box 500
1400 Vienna
Austria

E-mail: wdr@un.org
Website: www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html

UNITED NATIONS OFFICE ON DRUGS AND CRIME
Vienna

World Drug Report
2022

UNITED NATIONS
New York, 2022

PREFACE

Drugs can kill.

Addiction can be an unending, agonizing struggle for the person using drugs; suffering is needlessly compounded when people cannot access evidence-based care or are subjected to discrimination. The consequences of drug use can have ripple effects that hurt families, potentially across generations, as well as friends and colleagues. Using drugs can endanger health and mental health and is especially harmful in early adolescence. Illicit drug markets are linked with violence and other forms of crime. Drugs can fuel and prolong conflict, and the destabilizing effects as well as the social and economic costs hinder sustainable development.

The whole of the international community shares the same goals of protecting the health and welfare of people everywhere. But too often in the debate on drug policy approaches, we forget this basic and shared understanding, which is rooted in the fact that drug use for non-medical purposes is harmful.

We all want our children and loved ones to be healthy, and we want neighbourhoods and countries to be safe. As policymakers, we can see that illicit drug cultivation offers no way out for impoverished communities in the long run, that the drug trade has environmental impacts, and that drug trafficking along with associated corruption and illicit flows undermine the rule of law and stability.

Solutions to these shared threats and challenges to achieve our shared goals must also be shared and based on evidence. It is in this spirit that I am proud to present the World Drug Report 2022 from the United Nations Office on Drugs and Crime.

This is the first World Drug Report of the post-pandemic world. While countries continue to grapple with COVID-19 and its consequences, we have emerged from cycles of lockdowns to confront a "new normal". And we have found that the world post-pandemic remains one in crisis, faced with multiple conflicts, a continuing climate emergency and threat of recession, even as the multilateral order is showing troubling signs of strain and fatigue.

World drug challenges further complicate the picture. Cocaine production is at a record high, and seizures of amphetamine and methamphetamine have skyrocketed. Markets for these drugs are expanding to new and more vulnerable regions.

Harmful patterns of drug use likely increased during the pandemic. More young people are using drugs compared with previous generations. People in need of treatment cannot get it, women most of all. Women account for over 40 percent of people using pharmaceutical drugs for non-medical purposes, and nearly one in two people using amphetamine-type stimulants (ATS), but only one in five in treatment for ATS is a woman.

In the face of these multiple crises, we need to show greater care.

Care starts with evidence-based prevention and addressing perceptions and misperceptions of risk, including by taking a hard look at the messages our societies are sending to young people. UNODC research has shown that perceptions of cannabis harms have decreased in areas where the drug has been legalized. At the same time, the proportion of people with psychiatric disorders and suicides associated with regular cannabis use has increased, together with the number of hospitalizations. Some 40 per cent of countries reported cannabis as the drug related to the greatest number of drug use disorders.

Whole-of-society approaches are needed to ensure that people, young people most of all, have the information and develop the resilience to make good choices and that they can access science-based treatment and services for drug use disorders, HIV and related diseases when they need it.

There can be no effective prevention or treatment without recognition of the problem and the necessary funding to address the problem. Public resources are stretched to the limit by competing demands, but we cannot afford to let commitment wane. We need to promote compassion and better understanding.

Care in crises means ensuring services and essential medicines for all, including people in emergencies and humanitarian settings; people left behind in the pandemic; and people facing barriers of stigma and discrimination.

Care is also manifested in shared responsibility, and we need to renew international cooperation to sustainably reduce illicit crop cultivation and tackle the criminal groups trafficking drugs.

The World Drug Report seeks to offer the data and insights to inform our joint efforts. This year's edition delves into the interplay between drugs and conflict, the impact of drugs on the environment and the effects of cannabis legalization, and identifies dynamics to watch, from the opiate market in light of developments in Afghanistan to dark web drug sales.

I hope the report serves as a basis for effective responses, and generates the support we need to continue shedding light on different aspects of the world drug problem, and assisting Member States to take action and save lives.

Ghada Waly, Executive Director
United Nations Office on Drugs and Crime

WORLD DRUG REPORT 2022

BOOKLET 1 — EXECUTIVE SUMMARY
POLICY IMPLICATIONS

BOOKLET 2 — GLOBAL OVERVIEW OF
DRUG DEMAND AND DRUG SUPPLY

BOOKLET 3 — DRUG MARKET TRENDS OF
CANNABIS AND OPIOIDS

BOOKLET 4 — DRUG MARKET TRENDS OF COCAINE,
AMPHETAMINE-TYPE STIMULTANTS
AND NEW PSYCHOACTIVE SUBSTANCES

BOOKLET 5 — DRUGS AND THE ENVIRONMENT

CONTENTS

PREFACE 4

EXPLANATORY NOTES 11

SCOPE OF THE BOOKLET 13

COCAINE 15

- Global and regional supply of cocaine 15
- Global use of cocaine 29
- Regional patterns of cocaine use 30
- References 42

AMPHETAMINE-TYPE STIMULANTS 45

- Global supply of amphetamine-type stimulants 45
- Global supply of methamphetamine and amphetamine 46
- Global use of amphetamine-type stimulants 50
- Regional patterns in amphetamines supply and use 51
- Methamphetamine: regional overview 53
- Amphetamine: regional overview 68
- Global supply and demand of “ecstasy” 74
- “Ecstasy”: regional overview 78
- References 82

NEW PSYCHOACTIVE SUBSTANCES 87

- Global overview of new psychoactive substances 87
- Global supply of new psychoactive substances 91
- Global demand for new psychoactive substances 96
- Regional and subregional trends in markets for new psychoactive substances 100
- References 104

GLOSSARY 107

REGIONAL GROUPINGS 109

Acknowledgements

The *World Drug Report 2022* was prepared by the Research and Trend Analysis Branch, Division for Policy Analysis and Public Affairs, United Nations Office on Drugs and Crime (UNODC), under the supervision of Jean-Luc Lemahieu, Director of the Division, and Angela Me, Chief of the Research and Trend Analysis Branch, and the coordination of Chloé Carpentier, Chief of the Drug Research Section.

Content overview
Chloé Carpentier
Angela Me

Research, analysis and drafting
Julie Astoul
Jaqueline Garcia Yi
Kamran Niaz
Thomas Pietschmann
Danica Thanki
Antoine Vella
Yulia Vorobyeva

Data management and estimate production
Enrico Bisogno
Diana Camerini
Conor Crean
Hernan Epstein
Natalia Ivanova
Sabrina Levissianos
Andrea Oterová
Martin Raithelhuber
Umidjon Rakhmonberdiev
Ali Saadeddin
Markus Schwabe
Tun Nay Soe

Mapping
Coen Bussink
Francesca Massanello
Irina Tsoy
Lorenzo Vita

Graphic design and production
Anja Korenblik
Suzanne Kunnen
Kristina Kuttnig
Maria Moser
Lorenz Perszyk

Internal coordination and research assistance
Harvir Kalirai

Editing support
Leon Addie

Data support
Leila Ahmadi
Roberto Alvarez Teran
Rizwana Asad
Sinisa Durkulic
Antonela Guberac
Rakhima Mansurova
Bertrand Olivier
Inshik Sim
Kavinvadee Suppapongtevasakul
Heloise Wiart

Administrative support
Andrada-Maria Filip
Iulia Lazar

Review and comments
The *World Drug Report 2022* benefited from the expertise of and invaluable contributions from UNODC colleagues in all divisions and from the INCB Secretariat.

The Research and Trend Analysis Branch acknowledges the invaluable contributions and advice provided by the *World Drug Report* Scientific Advisory Committee:

Jonathan Caulkins
Paul Griffiths
Marya Hynes
Vicknasingam B. Kasinather
Charles Parry
Afarin Rahimi-Movaghar
Peter Reuter
Alison Ritter
Francisco Thoumi

Annual Report Questionnaire Focal Points

The UNODC gratefully acknowledges the continuous efforts of the Annual Report Questionnaire Focal Points in the Member States to collate and report national data on drug demand and supply, which form the basis of the *World Drug Report*:

Ahcene Sahtout (Algeria), Djazia Dehimi (Algeria), Mohamed Oundi (Algeria), Olimpia Torres Barros (Andorra), Adrián Betti (Argentina), Andres Quintana (Argentina), Diego Ruiz (Argentina), Armenuhi Chilingaryan (Armenia), Andrew Courir (Australia), Raphael Bayer (Austria), Wolfgang Pfneiszl (Austria), Said Asadli (Azerbaijan), Terrance Fountain (Bahamas), Abdulrahman Ahmed Showaiter (Bahrain), Galina Pyshnik (Belarus), Olegovich Pruchkovskiy (Belarus), Katia Huard (Belgium), Lies Gremeaux (Belgium), Nele Van Tomme (Belgium), Stéphanie Ovaere (Belgium), Sonam Tashi (Bhutan), Tsheringc Choden (Bhutan), Ivan Aliaga Casceres (Bolivia (Plurinational State of)), Richard Jesús López Vargas (Bolivia (Plurinational State of)), Wilson Salinas Olivares (Bolivia (Plurinational State of)), Elis Viviane Hoffmann (Brazil), Lívia Faria Lopes dos Santos Oliveira (Brazil), Rodrigo Bertoglio Cardoso (Brazil), Viviane Hoffmann (Brazil), Aimi Jamain (Brunei Darussalam), Hardiyamin Barudin (Brunei Darussalam), Radi Ignatov (Bulgaria), Slaveika Nikolova (Bulgaria), Amanda Pinke (Canada), Bobby Chauhan (Canada), Christina Arruda (Canada), Saeid Roushan (Canada), Daniel Diaz (Chile), Emilse Pizarro (Chile), Jose Marin (Chile), Luis Medel Espinoza (Chile), Monserrat Aranda (Chile), Yan Zheng (China; China, Hong Kong SAR), Kitty Hon (China, Hong Kong SAR), Hon Wai (China, Macao SAR), Oscar Ricardo Santa Lopez (Colombia), Andrés Rodríguez Pérez (Costa Rica), Beatriz Murillo Paz (Costa Rica), Roger Badou N'Guessan (Côte d'Ivoire), Hrvoje Paljan (Croatia), Lara Jezic (Croatia), Smilja Bagaric (Croatia), Gavriel Efstratiou (Cyprus), Ioanna Yiasemi (Cyprus), Nasia Fotsiou (Cyprus), Katerina Horackova (Czechia), Viktor Mravcik (Czechia), Lars Petersen (Denmark), Gilda Maria Francisco Espinal (Dominican Republic), Moises Gomez Trabous (Dominican Republic), Samanta Almeida (Ecuador), Sahar Ahmed Mohamed Farag (Egypt), Alma Cecilia Escobar de Mena (El Salvador), Carmen Morena Batres de Gracias (El Salvador), Heli Laarmann (Estonia), Katri Abel- Ollo (Estonia), Sanna Rönkä (Finland), Claire Jounet-Arenes (France), Joséphine Affres (France), Roland Hein (Germany), Saskia Jensen (Germany), Charles Oblitei Commey (Ghana), Godlove Vanden-Bossche (Ghana), Rosemond Agbefu (Ghana), Argyro Andaraki (Greece), Danae Manousaki (Greece), Gerasimos Papanastasatos (Greece), Ioannis Marouskos (Greece), Ioulia Bafi (Greece), Manina Terzidou (Greece), Mario Sierra (Guatemala), Roberto Maldonado (Guatemala), Rachel Victoria Ulcena (Haiti), Paola Cristina Girón Serrano (Honduras), Anna Péterfi (Hungary), Gergely Csaba Horvath (Hungary), Ibolya Csákó (Hungary), Peter Foldi (Hungary), Agus Irianto (Indonesia), Mohammad Narimani (Iran (Islamic Republic of)), Seyed Hamzeh Madani (Iran (Islamic Republic of)), Imad Abdel Raziq Abdel Gani (Iraq), Stephen Murphy (Ireland), Eti Kahana (Israel), Andrea Zapparoli (Italy), Elisabetta Simeoni (Italy), Yuki Maehira(Japan), Jamil Alhabibeh (Jordan), Malak Al-mahirah (Jordan), Alma Agibayeva (Kazakhstan), Stephen Kimani (Kenya), Akyl Amanov (Kyrgyzstan), Agnese Zile-Veisberga (Latvia), Diana Vanaga-Araja (Latvia), Ieva Pugule (Latvia), Zeinab Abbass (Lebanon), Jurgita Žilinskaite (Lithuania), Michel Goergen (Luxembourg), Nadine Berndt (Luxembourg), Rita Cardoso Seixas (Luxembourg), Nikmat Yusop (Malaysia), John Testa (Malta), Victor Pace (Malta), Corceal Sewraz (Mauritius), Martha Vazquez (Mexico), Valeria Solis (Mexico), Jasna Sekulic (Montenegro), Nevena Markovic (Montenegro), Valentina Bodven (Montenegro), Abdelhafid EL Maaroufi (Morocco), Abderrahim Matraoui (Morocco), Ayoub Aboujaafer (Morocco), EL Maaroufi Abdelhafid (Morocco), Mustapha El alami El Fellousse (Morocco), Nadia Chouaib (Morocco), Myint Aung (Myanmar), Zaw Lin Oo (Myanmar), Guus Cruts (Netherlands), Martijn Mulder (Netherlands), Vincent van Beest (Netherlands), Blair Macdonald (New Zealand), Lauren Bellamore (New Zealand), Manuel García Morales (Nicaragua), Abdoul Aziz Garba Yayé (Niger), Hamidou Amadou Insa (Niger), Ibiba Jane Odili (Nigeria), Ngozi Vivian Oguejiofor (Nigeria), Daniel Bergsvik (Norway), Ola Bilgrei (Norway), Mahmood Al Abri Sultante (Oman), Mohamed Amin (Oman), Sayed Sijjeell Haider (Pakistan), Daysi Vargas (Panama), Rubielys Saladana (Panama), Tatiana Tesis (Panama), Crhistian Gomez (Paraguay), Juan Pablo Lopez (Paraguay), Laura Reinoso (Paraguay), Lillian Portillo (Paraguay), Mathías Jara (Paraguay), Sandra Morales (Peru), Corazon P. Mamigo (Philippines), Johanna Rosales (Philippines), Michael P. Miatari (Philippines), Rebecca F. Arambulo (Philippines), Yvonne B. San Pascual (Philippines), Lukasz Jedruszak (Poland), Ana Sofia Santos (Portugal), Elsa Maia (Portugal), Quatar ARQ (Qatar), Donghyun Kim (Republic of Korea), Yongwhee Kim (Republic of Korea), Victor Tacu (Republic of Moldova), Ciprian Zetu (Romania), Oleg Lozhkin (Russian Federation), Saud Alsabhan (Saudi Arabia), Dusan Ilic (Serbia), Evelyn Low (Singapore), Melvina Niroshini Andrew (Singapore), Thamaraichelvan Meyappan (Singapore), Eva Debnarová (Slovakia), Ivana Bucková (Slovakia), Jože Hren (Slovenia), Staša Šavelj (Slovenia), Vathiswa Dlangamandla (South Africa), Elena Alvarez Martín (Spain), Thamara Darshana (Sri Lanka), Frida Nyman (Sweden), Jennie Hagelin (Sweden), Joakim Strandberg (Sweden), Johan Ragnemalm (Sweden), Julia Ahlin (Sweden), Barbara Walther (Switzerland), Diane Buechli (Switzerland), Marc Wittwer (Switzerland), Verena Maag (Switzerland), Saidzoda Firuz Mansur (Tajikistan), Prang-anong Saeng-arkass (Thailand), Mouzinho T. Correia (Timor-Leste), Abi Kemeya-Abalo (Togo), Awi Essossimna (Togo), Nadine Beeka (Trinidad and Tobago), Sheena Arneaud (Trinidad and Tobago), Murat Sarikamisli (Türkiye), Resul Olukman (Türkiye), Olena Pugach (Ukraine), Olga Davidenko (Ukraine), Vita Druzhynina (Ukraine), Amal Ahmed Ali Alzeyoudi (United Arab Emirates), Alberto Oteo (United Kingdom of Great Britain and Northern Ireland), Kerry Eglinton (United Kingdom of Great Britain and Northern Ireland), Maria Fe Caces (United States of America), Nicholas Wright (United States of America), Elisa Maria Cabrera (Uruguay), Khatam Djalalov (Uzbekistan), Alberto Alexander Matheus Melendez (Venezuela (Bolivarian Republic of)), Carlos Javier Capote (Venezuela (Bolivarian Republic of)), Elizabeth Pereira (Venezuela (Bolivarian Republic of)), Ronnet Chanda (Zambia), Ashley Verenga (Zimbabwe), Evelyn Taurai Phillip (Zimbabwe), Anan Mohammad Hassan Theeb (State of Palestine), Mutaz Ereidi (State of Palestine), Penny Garcia (Gibraltar)

EXPLANATORY NOTES

The designations employed and the presentation of the material in the *World Drug Report* do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral term "drug use" is used in the *World Drug Report*. The term "misuse" is used only to denote the non-medical use of prescription drugs.

All uses of the word "drug" and the term "drug use" in the *World Drug Report* refer to substances controlled under the international drug control conventions, and their non-medical use.

All analysis contained in the *World Drug Report* is based on the official data submitted by Member States to the UNODC through the annual report questionnaire unless indicated otherwise.

The data on population used in the *World Drug Report* are taken from: *World Population Prospects: The 2019 Revision* (United Nations, Department of Economic and Social Affairs, Population Division).

References to dollars ($) are to United States dollars, unless otherwise stated.

References to tons are to metric tons, unless otherwise stated.

The following abbreviations have been used in the present booklet:

2C-B	4-bromo-2,5-dimethoxyphenethylamine
2C-B-FLY	8-bromo-2,3,6,7-benzo-dihydro-difuran-ethylamine
2C-E	2,5-dimethoxy-4-chloro-phenythylamine
3,4-MDP-2-P	3,4-methylenedioxyphenyl-2-propanone
4-FA	4-fluoroamphetamine
5-MeO-DIPT	5-methoxy-N,N-diisopropyltryptamine
5-MeO-DMT	5-methoxy-dimethyltrptamine
alpha-PPP	*alpha*-pyrrolidinopropiophenone
alpha-PVP	*alpha*-pyrrolidinovalerophenone
APAA	*alpha*-phenylacetoacetamide
APAAN	*alpha*-phenylacetoacetonitrile
ASEAN	The Association of Southeast Asian Nations
ATS	amphetamine-type stimulants
BMK	benzyl methyl ketone
BZP	*N*-benzylpiperazine
COVID-19	coronavirus disease
DEVIDA	National Commission for Development and Life without Drugs of Peru. (Comisión Nacional para el Desarrollo y Vida sin Drogas)
EAPA	ethyl *alpha*-phenylacetoacetate
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
Europol	European Union Agency for Law Enforcement Cooperation
FARC-EP	Revolutionary Armed Forces of Colombia-People's Army
FCPs	freebase consumer products
ha	hectares
INCB	International Narcotics Control Board
LSD	lysergic acid diethylamide
MAPA	methyl *alpha*-phenylacetoacetate
MBDB	methylbenzodioxolylbutanamine
mCPP	*m*-chlorophenylpiperazine
MCPs	manufacturing process consumer products
MDA	3,4-Methylenedioxyamphetamine
MDAI	methylenedioxyaminoindane
MDEA	methylenedioxyethamphetamine
MDMA	3,4-methylenedioxymethamphetamine (commonly known as "ecstasy")
MT-45	1-cyclohexyl-4-(1,2-diphenylethyl)piperazine
NPS	New psychoactive substances
P-2-P	1-phenyl-2-propanone
PMMA	*para*-methoxymethylamphetamine
PNIS	National Comprehensive Programme for the Substitution of Illicit Crops
S-DDD	defined daily doses for statistical purposes
UNODC	United Nations Office on Drugs and Crime
VRAEM	Valle de los Ríos Apurímac, Ene y Mantaro, Peru

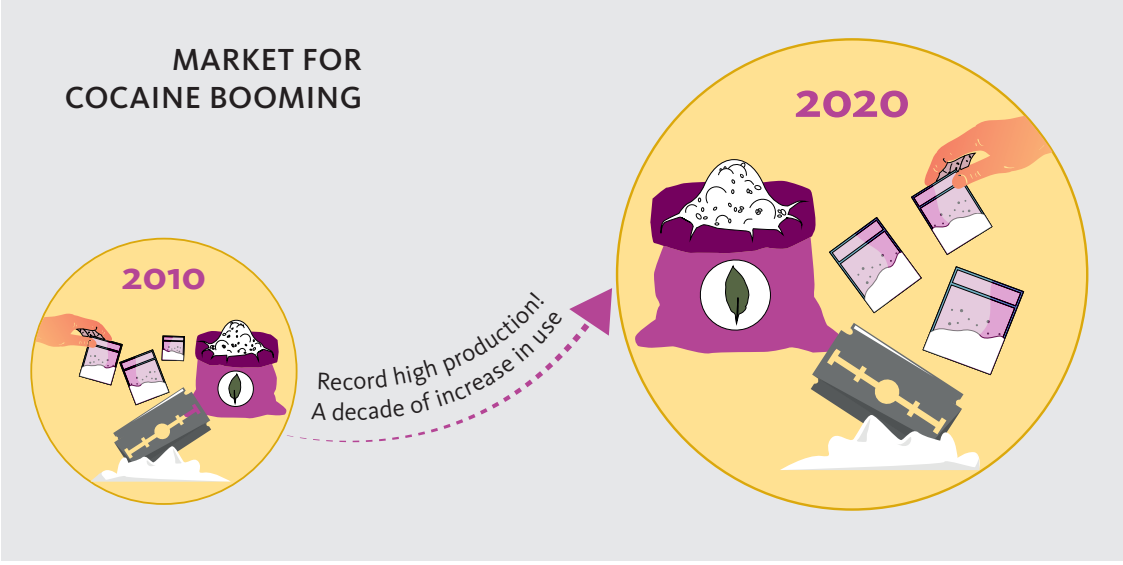
SCOPE OF THE BOOKLET

Constituting the fourth part of the *World Drug Report 2022*, this booklet focuses on the market dynamics of various stimulants – cocaine, amphetamines and "ecstasy" – and of NPS.

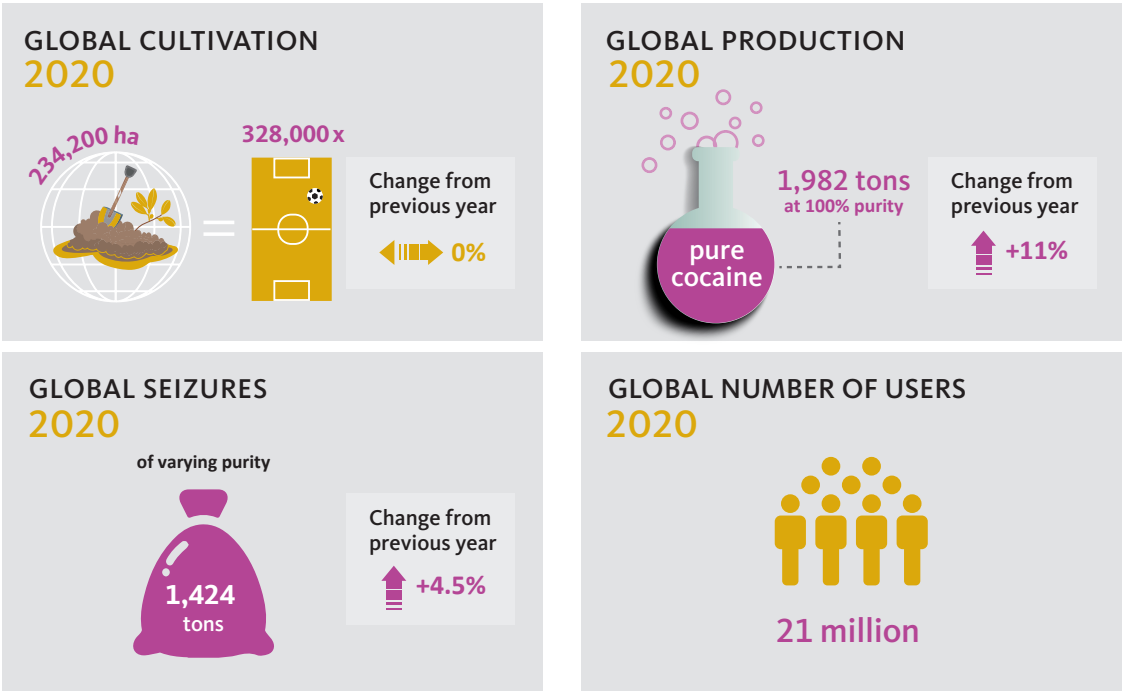
The first chapter contains an analysis of the global market for cocaine, starting with a review of cocaine supply, including trends in the cultivation of coca bush and in the manufacture of and trafficking in cocaine at the global level and in the various regions. An analysis of different eradication strategies is included, as well as of the role of women in the cocaine supply chain. The chapter also presents the latest estimates of and trends in cocaine use, including a brief introduction to the various cocaine consumer products. Finally, it reviews the trends in the use of cocaine and the impact of the coronavirus disease (COVID-19) pandemic in different regions.

With respect to ATS, the second chapter of the booklet reviews the latest trends in the supply of and demand for methamphetamine, amphetamine and "ecstasy". It provides up-to-date information on latest trends in the manufacture of these drugs and an overview of their trafficking at the global and regional levels. The chapter also presents the latest estimates of and trends in the use of amphetamines and "ecstasy" at global and regional levels. A topical analysis discusses the emerging manufacture of methamphetamine in Afghanistan and the impact on markets in the subregion. The chapter concludes with recent trends in the demand and supply of "ecstasy".

The third chapter focuses on NPS and starts with an overview of the diverse range of substances which make up this category. It then follows with an analysis of the latest estimates of and trends in seizures of NPS and the range of NPS identified to date. Finally, the chapter reviews the global demand for and the regional and subregional trends in the use of NPS.



COCAINE



Global and regional supply of cocaine

Global situation: the area under coca bush cultivation remained stable, cocaine manufacture hit record high

The global area under coca bush cultivation remained basically unchanged in 2020, at 234,200 ha,[a] 5 per cent below the peak in 2018. The decrease in the area under coca bush cultivation in Colombia of 7.1 per cent in 2020 was offset by increases in Peru (13 per cent) and the Plurinational State of Bolivia (15.3 per cent).[1]

a This figure includes areas under coca bush cultivation considered for traditional use of coca leaf.

Potential cocaine manufacture grew 11 per cent in 2020, compared with the previous year, reaching a new record high of 1,982 tons (adjusted to 100 per cent purity). Manufacture increased by 8 per cent in Colombia and by a combined total of 16.5 per cent in Peru and the Plurinational State of Bolivia. Global cocaine manufacture has now more than doubled since the low of 2014.[2]

Colombia: the area under coca bush cultivation declined in 2020 while manufacture of cocaine continued increasing

In 2020, Colombia continued to be the country with the largest share of global coca bush cultivation, accounting for an estimated 61 per cent of the global total.

The area under coca bush cultivation in Colombia comprised 143,000 ha in 2020, a decrease of 7 per cent on the previous year. There were significant double-digit decreases in most but not all areas, although exceptions were found in certain high-density areas, such as the departments of Antioquia, Córdoba and Bolívar, where cultivation increased, and the regions of Catatumbo and Meta-Guaviare, where reported decreases were below the national average.

A total of 87 per cent of the area under coca bush cultivation has been under continuous cultivation over the last 10 years, and these "hotspots" have been consolidating,[3] often together with cocaine laboratories. In the hotspots, enhanced agricultural practices and processing methods now produce more leaves, more alkaloid and more cocaine per hectare.

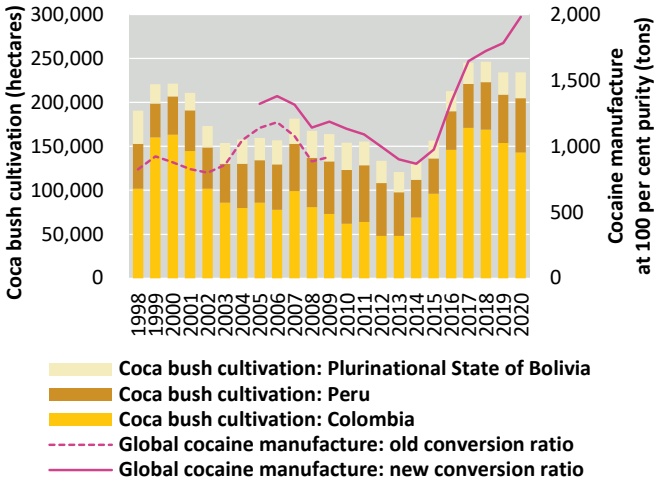
The area under coca bush cultivation in Colombia more than tripled during peace negotiations with FARC-EP, then decreased after the peace agreement was concluded in November 2016.[4]

In 2020, despite productive areas under coca bush cultivation decreasing by 9 per cent, compared with the previous year,[5] potential cocaine manufacture in Colombia rose by 8 per cent,[6] to 1,228 tons, owing to increased yields and higher laboratory efficiency rates. The average yield of fresh coca leaf harvested per hectare under coca bush cultivation rose by 10 per cent, from 5.8 tons in 2019 to 6.4 tons in 2020, while the overall quantity of cocaine hydrochloride obtained from one hectare under productive coca bush cultivation rose by 18 per cent, from 6.7 kg in 2019 to 7.9 kg in 2020.[7]

Peru: cultivation and manufacture continued to rise

The area under coca bush cultivation in Peru has shown an increasing trend since 2015, and this was even more pronounced in 2020, when, according to the Government of Peru, the area under cultivation increased by 13 per cent compared with the previous year, to 61,800 ha, representing over 50 per cent of the increase of more than 21,000 ha between 2015 and 2020.[8] This trend occurred in parallel with an annual decrease of close to 30,000 ha in the area subject to eradication. The largest decrease, 75 per cent from the previous

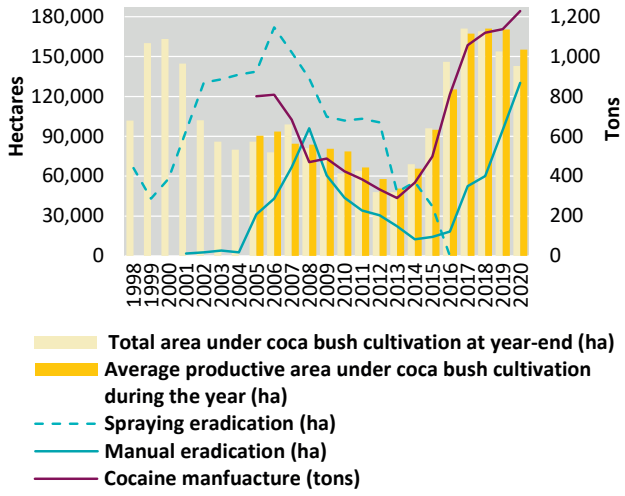
FIG. 1 Global coca bush cultivation and cocaine manufacture, 1998–2020



Sources: UNODC calculations based on UNODC data and data from the respective Governments, and coca bush cultivation surveys carried out in Bolivia (Plurinational State of), Colombia and Peru in 2020 and previous years; and United States of America, Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Report*, various years.

Note: See the methodological annex the present report for more information on the "old" and "new" conversion rates.

FIG. 2 Coca bush cultivation, eradication and manufacture, Colombia, 1998–2020

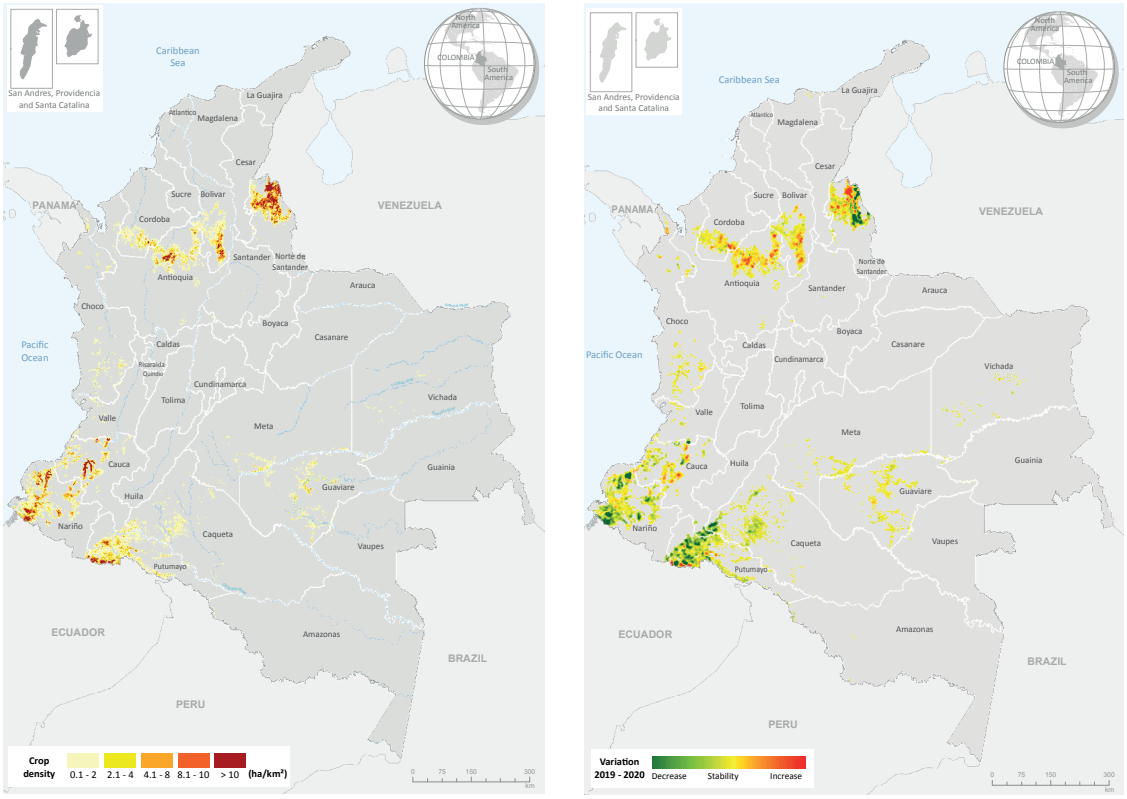


Source: UNODC Colombia, Integrated System for Illicit Crop Monitoring (SIMCI) and Gobierno de Colombia, Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2020 (Bogotá, July 2021).

MAP 1 Coca bush cultivation in Colombia in 2020 and change from 2019

Density of coca bush cultivation, 2020

Changes in the area under coca bush cultivation, 2019–2020



Source: UNODC Colombia, Integrated System for Illicit Crop Monitoring (SIMCI) and Gobierno de Colombia, Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2020 (Bogotá, July 2021).

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

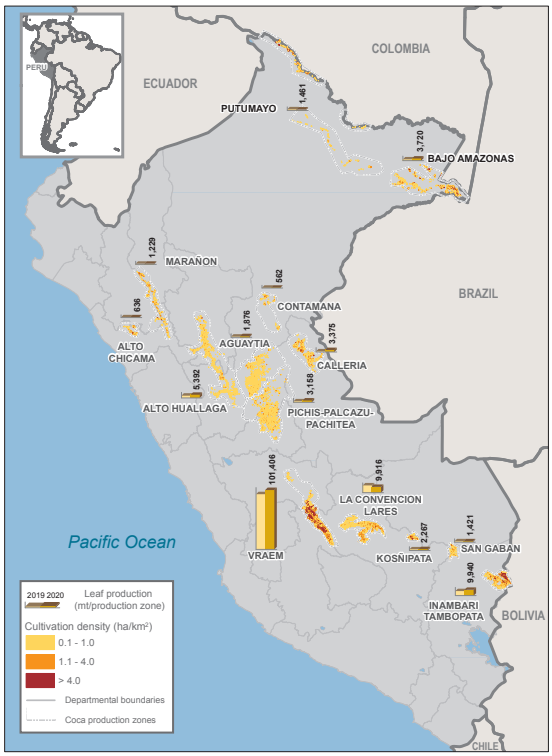
year, occurred in 2020, as the COVID-19 pandemic hindered eradication efforts.[9]

Coca bush cultivation in Peru in 2020 was again centred in the Valle de los Ríos Apurímac, Ene y Mantaro (VRAEM),[10] which accounted for 45 per cent of the total area under coca bush cultivation in the country, followed by the regions of Inambari-Tambopata (12 per cent) and La Convención-Lares (11 per cent).[11] In terms of coca leaf output, VRAEM accounted for 69 per cent of the country's total production in 2020, while Huallaga, the traditional coca leaf cultivation area that dominated production in Peru from the 1970s to the 1990s, accounted for less than 4 per cent.[12]

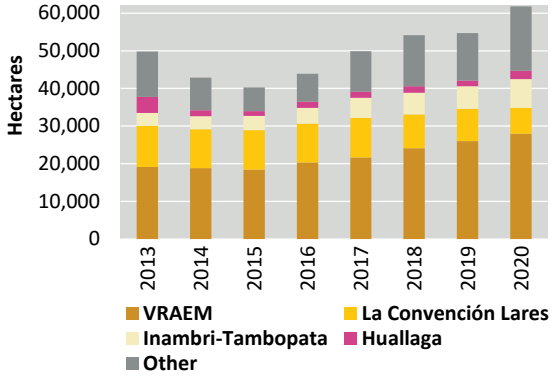
According to the Government of Peru, overall coca leaf output rose by 11 per cent in 2020, with increases reported from most parts of the country. Among the major coca leaf production regions, only La Convención-Lares reported a substantial decrease in output, of 20 per cent.[13] Declining price trends seem to reflect increasing coca leaf production and cocaine manufacture in Peru, not only in 2020 but potentially also in 2021.

FIG. 3 Coca leaf production in Peru, 2019 and 2020, and areas under coca bush cultivation, 2020

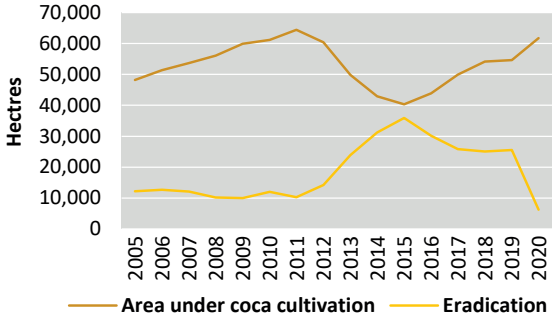
Density of coca bush cultivation, 2020



Coca bush cultivation by region,2013–2020



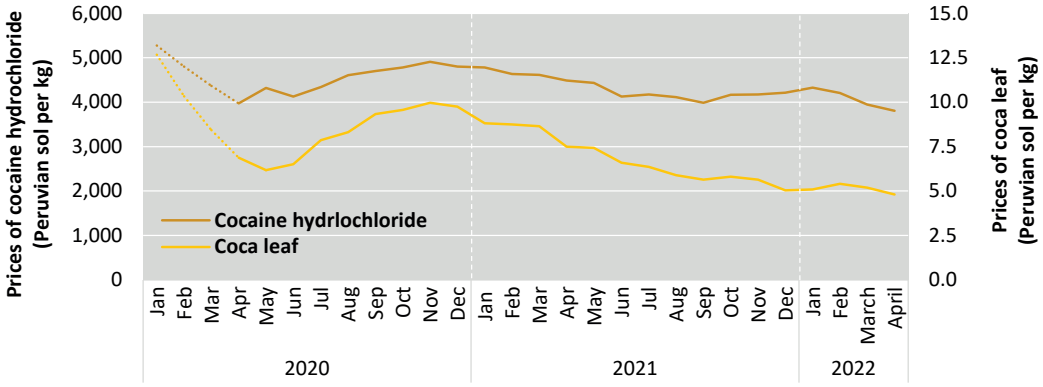
Coca bush cultivation and eradication, 2005–2020



Sources: Peru, *Sistema de Información de Lucha contra las Drogas* and Observatorio Peruano de Drogas, "Producción estimada de hoja de coca en el Perú, 2020" (October 2021), and previous years since 2018; and UNODC and DEVIDA, *Perú: Monitoreo de Cultivos de Coca 2017* (December 2018), and previous years.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

FIG. 4 Prices of coca leaf and cocaine hydrochloride, Peru, January 2020–April 2022



Source: DEVIDA, "Monitoreo de precios de hoja de coca y derivados cocaínicos en zonas estratégicas de intervención: reporte No. 25, April 2022.

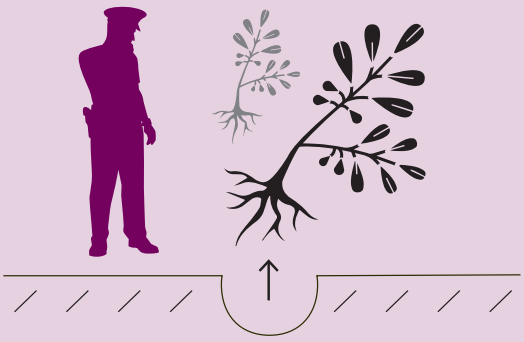
Sustainability of the impact of forced and voluntary eradication on coca cultivation in Colombia

Eradication is used by authorities to destroy illicit crops to reduce the cultivation and supply of plant-based drugs. Eradication can be forced, where it is conducted by authorities as part of law enforcement activities, or voluntary, often in the context of alternative development programmes where it can be a prerequisite to farmers participating and receiving benefits. Forced eradication is usually employed as a one-time shock and targets areas with high density of coca bush cultivation, where it may be dangerous or difficult for authorities to work. Voluntary eradication is mostly gradually implemented over several years, often focusing on areas with low density of coca bush cultivation, which present comparatively lower safety risks for the staff working in those projects.

The evidence base for the effectiveness and sustainability of different methods of eradicating illicit drug crops remains scant. UNODC has sought to assess the results achieved in reducing illicit drug crop cultivation over time, employing matched difference-in-differences analysis to estimate the effects of forced and voluntary eradication on areas of coca bush cultivation in Colombia.[i] The analysis shows that forced eradication resulted in an initial decrease in illicit drug crop cultivation due to the direct removal of coca bushes; and that voluntary eradication, conducted along with alternative development (AD) initiatives as part of the "Programa Nacional de Subtitucion de Cultivos" project, caused an initial increase due to "perverse incentive" effects, with some farmers cultivating coca bushes to participate in the projects, but this was quickly offset by farmers voluntarily destroying their crops.

Thus, over time, illicit drug crop cultivation decreased at higher rate in areas with voluntary eradication and AD than in areas without. In these areas, the "eradication gain" – the gap in illicit drug crop cultivation between areas subjected to eradication and areas left untouched – is projected to continue increasing over the next decade. In contrast, areas with forced eradication, despite the initial decrease in crops, saw cultivation increase at a higher rate compared to similar areas where no forced eradication took

SOME EVIDENCE IS EMERGING ON THE LONG-TERM OUTCOME OF FORCED AND VOLUNTARY ERADICATION



Forced eradication

resulted in an initial decrease in illicit-drug crop cultivation due to the direct removal of coca bushes. However, cultivation later increased at a higher rate compared to similar areas where no forced eradication took place.

Voluntary eradication

conducted along with alternative development (AD) interventions led to an initial increase due to "perverse incentive" effects but over time, illicit drug crop cultivation decreased at a higher rate in areas with voluntary eradication.

place. Over the next 10 years, the "eradication gain" is projected to diminish altogether, indicating that one-off forced eradication offers no long-term benefits.

In Colombia, coca bush cultivation areas decreased from 171,000 hectares in 2017 to 143,000 hectares in 2020. This reduction occurred in parallel to (a) an increase in forced manual eradication efforts from 17,600 hectares in 2016 to 130,000 hectares in 2020; and (b) the implementation of a large-scale alternative development project (*Programa Nacional Integral de Sustitución de Cultivos Ilícitos* or PNIS, from 2016 to date), which prerequisite for participation is the voluntarily eradication of coca crops.[ii] The key question is how much eradication determined the decline and if it has led to a sustainable reduction of illicit coca bush cultivation.

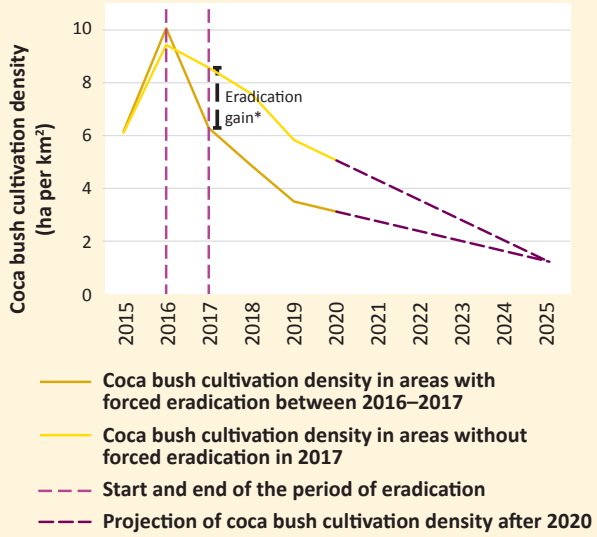
Sustainability of the impact of forced eradication on coca bush cultivation

Forced eradication causes an initial decrease in illicit drug crop cultivation due to the direct removal of coca bushes by the authorities and a "supplementary eradication" (coca eradicated by farmers without the interventions of the authorities). Starting from selected areas[iii] that in 2015 had equal density[iv] of coca bush cultivation, UNODC comparative analysis shows that between 2016–2017 there was a general decrease of coca density, with areas subjected to forced eradication decreasing 2.9 hectares of coca per km^2 [v] more than areas without forced eradication. Of these 2.9 hectares of coca per km^2, 2.3 hectares per km^2 were forcedly eradicated by the authorities and the remaining 0.6 hectares per km^2 were a "supplementary eradication" (coca eradicated by the farmers without the interventions of the authorities). This supplementary eradication could possibly be explained by the presence of the authorities which made coca commercialization more difficult and coca bush cultivation less attractive for the farmers in the area, and concerns by farmers of being subject to forced eradication later.

However, the forced "eradication gain" (shown in the graph as the difference in coca density in areas with eradication and areas without) of 2.9 hectares of coca per km^2 [vi] started to decline after 2017 and in 2020 reached 2.6 hectares.[vii] As coca density decreases slower in areas that were subjected to forced eradication, the gain originally obtained with forced eradication is projected to reach zero by 2025.

The lower speed of density decrease in areas with forced eradication may indicate that socio-economic factors had a stronger impact than eradication in influencing farmers' decisions on whether to cultivate coca, meaning forced eradication alone was not sufficient to sustainably reduce coca bush cultivation over time.

Trend in coca cultivation density before and after forced eradication in 2017 (selected locations), hectares per km^2, 2015–2020



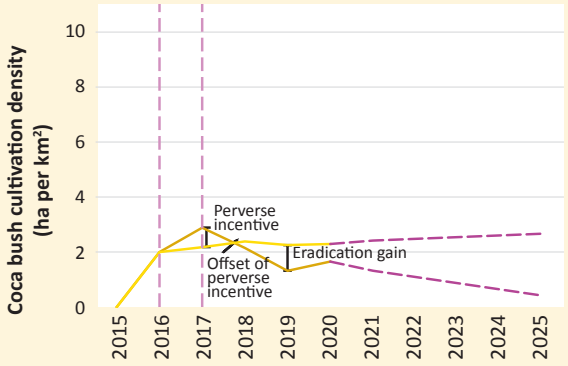
Source: UNODC's calculations based on coca monitoring data from Colombia (2015-2020) and eradication data of the Government of Colombia (2017).

** Eradication gain (simplified in the graph for visualization purposes) = difference in coca density between 2017 and 2016 in areas with forced with eradication – difference in coca density between 2017 and 2016 in areas without forced eradication = 2.9 hectares of coca per km^2.*

Sustainability of the impact of voluntary eradication on coca bush cultivation

Voluntary eradication when carried out together with alternative development projects had a more sustainable impact. This is supported by data of coca bush cultivation density measured in areas that participated in the PNIS and in areas that did not participate. Between 2016 and 2017 the coca density grew 0.7 hectares per km^2 [viii] more in the PNIS locations than in non-PNIS locations as a result of the so-called "perverse incentive". Farmers assumed they needed to cultivate coca to participate in the project. Nevertheless, this perverse incentive was eventually offset by the voluntary eradication and between 2016 and 2019 the differential change in coca bush cultivation density was 0.9 hectares per km^2 lower in project areas than non-project areas. However, by 2020 delays in the implementation of the income-generating productive phase of the project caused the differential change to decrease to 0.6 hectares per km^2 in locations with voluntary eradication in comparison to similar locations without.

Trend in coca cultivation density before and after voluntary eradication in 2017 (selected locations), hectares per km², 2015–2020



Coca bush cultivation density in areas with voluntary eradication between 2016–2017

Coca bush cultivation density in areas without voluntary eradication

Start and end of the period of eradication

Projection of coca bush cultivation density after 2020

Source: UNODC's calculations based on coca monitoring data from Colombia (2015-2020) and PNIS data (2017).

Notes: Perverse incentive = initial increase in coca bush cultivation density due to the farmers' assumption that they need to cultivate coca to participate in alternative development projects. Eradication gain in 2019 (simplified in the graph for visualization purposes) = (difference in coca density between 2019 and 2016 in areas with forced eradication) – (difference in coca density between 2019 and 2016 in areas without forced eradication) = 0.9 hectares of coca per km².

This analysis has used a natural experiment environment to measure the impact of forced and voluntary eradication by considering areas in Colombia with the same initial level of coca bush cultivation density and socio-economic characteristics.[ix] The comparative analysis of trends between eradicated and non-eradicated areas among these selected areas has shown that forced eradication can have an immediate gain in terms of reducing density of coca bush cultivation, but this gain appears short-lived and unsustainable. Over the years, the eradication gain from forced eradication continues to decrease until it disappears in 2025. Voluntary eradication together with alternative development assistance displays a more promising impact as the gain of voluntary eradication in terms of reduced density over time seems more durable if the development assistance delivers a complete package of interventions and conditions. The sustainability of voluntary eradication may depend on how well the accompanying alternative development projects fulfil the income-generating needs of farmers.

This analysis provides only initial findings on the different impact that different policies of forced and voluntary eradication have on reducing illicit coca bush cultivation. The analysis is based on two different scenarios with forced eradication made alone, without other interventions, in one year and voluntary eradication implemented together a continued delivery of alternative development interventions over a number of years. The sustainability of forced or voluntary eradication is likely to change under different scenarios including forced eradication followed by alternative development (a policy currently implemented in several parts of Colombia and other countries in Latin America); periodic or recurrent forced eradication (repeated forced eradication in the same area over different years); unconditional alternative development (or alternative development not conditional on voluntary eradication to participate in the project); and preventive alternative development (meaning alternative development implemented in areas at risk of illicit drug crop cultivation but without illicit drug crop cultivation).

[i] The evidence presented in this section corresponds to the results of an analysis that combines statistical matching of areas with and without eradication and further evaluation with a difference-in-difference method (see the online methodological annex for further details).

[ii] For beneficiaries cultivating coca. However, PNIS also has as beneficiaries non-coca growers and "raspachines" or coca labor.

[iii] Areas for this analysis were statistically selected based on the results of a matching between areas with forced or voluntary eradication (treatment areas) and areas without (control areas). This statistical match was conducted to make sure that treatment and control areas were similar before the forced or voluntary eradication (for instance, same coca bush cultivation density; poverty levels; and distance to roads, other infrastructure, and natural protected areas before the forced or voluntary eradication or "treatment" took place during 2016-2017). Treatment areas or control areas without statistical matches were not considered in the analysis (see the methodology section for further details).

[iv] Density was measured as number of hectares under coca bush cultivation per 1 km².

[v] Areas with forced eradication had a reduction in the density of coca 3.8 ha per km² while areas without eradication had a reduction of 0.9.

[vi] This value corresponds to the differential difference in coca density between 2017 (after the eradication) and 2016 (immediately before the eradication) in areas with forced eradication minus the difference in coca density between 2017 (after the eradication) and 2016 (immediately before the eradication) in areas without forced eradication. (see the methodology section for further details).

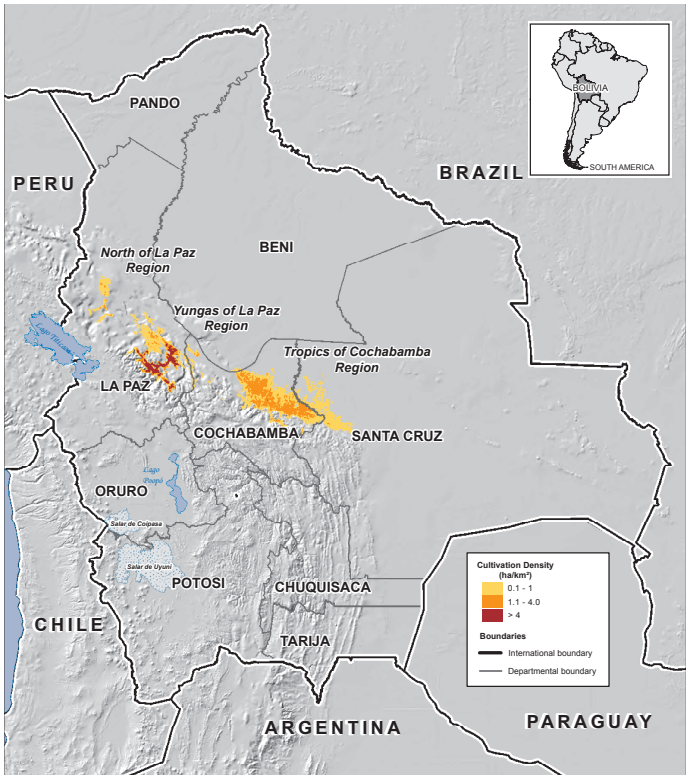
[vii] This value corresponds to the difference in coca density between 2020 (after the eradication) and 2016 (immediately before the eradication) in areas with forced eradication minus the difference in coca density between 2020 (after the eradication) and 2016 (immediately before the eradication) in areas without forced eradication.

[viii] This value corresponds to the difference in coca density between 2017 (after the eradication) and 2016 (immediately before the eradication) in areas with voluntary eradication minus the difference in coca density between 2017 (after the eradication) and 2016 (immediately before the eradication) in areas without voluntary eradication. Alternative development projects are usually on rolling basis (beneficiaries may register in different years after the project started). So, here we only used the registered beneficiaries that voluntarily eradicated their coca crops during 2016-2017.

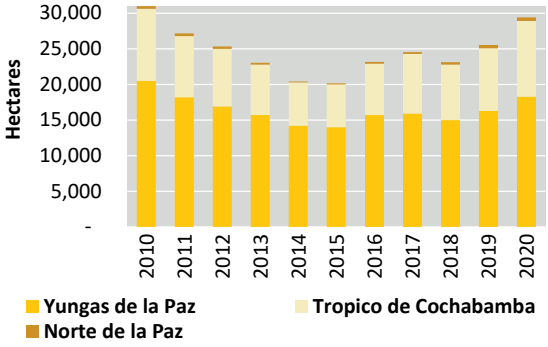
[ix] By considering areas with similar initial characteristics, the analysis measured the net impact of eradication as external factors that could have explained the difference were excluded.

FIG. 5 Area under coca bush cultivation, Plurinational State of Bolivia, 2020

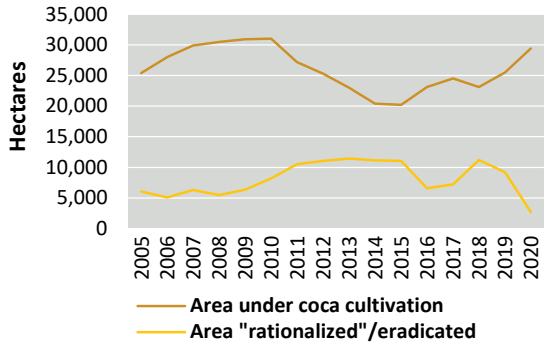
Coca leaf production, 2020



Coca bush cultivation, by region, 2010–2020



Coca bush cultivation and eradication, 2005–2020



Source: UNODC and Plurinational State of Bolivia, Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2020 (August 2021).

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

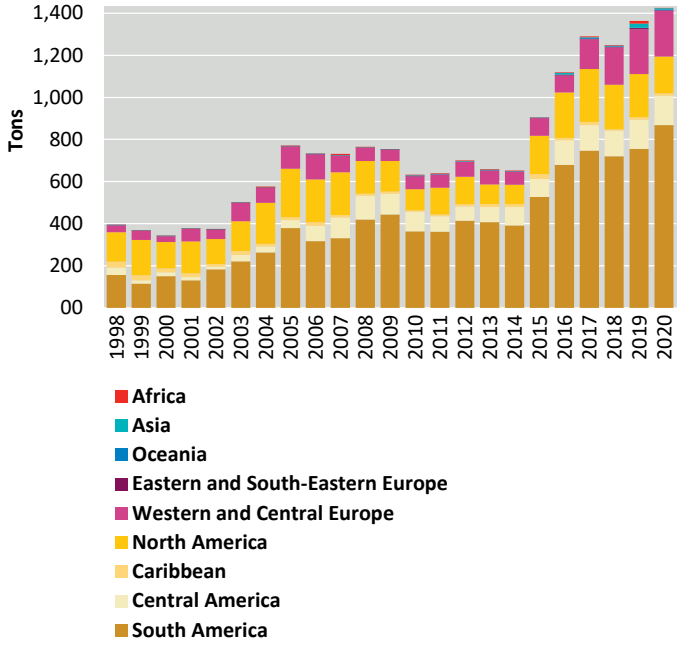
Plurinational State of Bolivia: cultivation and manufacture increased in 2020

The area under coca bush cultivation in the Plurinational State of Bolivia continued to increase in 2020, growing by 15 per cent, to 29,400 ha, an increase accounting for almost half of all growth in the period 2015–2020,[14] and continued to exceed the officially allowed maximum of 22,000 ha in the country's authorized zones.[b]

b In accordance with Law No. 906 on coca (Ley General de la Coca, Ley 906) of March 2017, coca may be grown in specially authorized zones in the Department of La Paz on a surface area of up to 14,300 ha and in the Department of Cochabamba on a surface area of up to 7,700 ha

Double-digit year-on-year growth rates in the area under coca bush cultivation in 2020 were reported in the traditional coca-producing regions of Yungas de la Paz (an increase of 12 per cent, to 18,300 ha, representing 62 per cent of the total area under coca bush cultivation in the country) and Trópico de Cochabamba (and increase of 21 per cent, to 10,600 ha, or 36 per cent of the total area under cultivation), and a growth was also reported in Norte de la Paz (an increase of 9 per cent, to 500 ha, or 2 per cent of the total area under cultivation).[15] Legal limits of 14,300 ha in the authorized zones of the Department of La Paz and 7,700 ha in the authorized zones of the Department of Cochabamba were therefore surpassed in 2020.[16] In relative terms, there was a shift towards coca bush cultivation

FIG. 6 Global quantities of cocaine seized, by region and subregion, 1998–2020



Source: UNODC, responses to the annual report questionnaire.

Note: Includes seizures of cocaine hydrochloride, coca paste and base and "crack" cocaine.

in Trópico de Cochabamba, a region where yields are particularly high and where coca leaf production rose by 17 per cent in 2020, compared with the previous year, outpacing growth in the area under coca bush cultivation, which grew by 15 per cent.[17]

Increases in the area under coca bush cultivation occurred in parallel to decreases in the area subject to eradication, both in 2020 and the period 2015–2020.[18] A decrease in eradication was noted across all coca-growing areas of the country in 2020.[19]

Record high in global cocaine seizures

Trafficking in cocaine continued to increase in 2020 despite the COVID-19 pandemic, and global quantities of cocaine seized (not adjusted for purity) increased by 4.5 per cent, to a new record high of 1,424 tons, with quantities of cocaine paste and cocaine base seized rising by 16 per cent, to 108 tons, and quantities of cocaine hydrochloride seized rising by 4 per cent, to 1.105 tons (and only seizures of "crack" cocaine and non-specified types of cocaine showing smaller growth rates). Overall, estimates of global quantities of cocaine manufactured and seized show a strong positive correlation (with a correlation coefficient of 0.88 between 2005 and 2020),[20] suggesting that the interception of cocaine has kept pace with the increasing supply of and trafficking in cocaine. In fact, long-term data indicate that quantities of cocaine seized have increased far more than quantities manufactured, although the comparability of the two data sets is limited by the potentially varying levels of purity of seized quantities over time. Between 2010 and 2020, global potential cocaine manufacture, expressed in 100 per cent purity, rose by 75 per cent, while global quantities seized (not adjusted for purity) rose by 125 per cent.[21] Uncertainty regarding the purity of seized cocaine across all countries prevents a precise calculation of interception rates, but the data suggest that they increased, although not by enough to reduce the amount of cocaine available for consumption.

Longer-term increases in global cocaine seizures show a clear upward trend over the past two decades, notably in the period 2015–2020, primarily driven by a shift towards seizures made in South America, notably in the countries where most of the cocaine manufacture takes place. The total quantity seized in South America is now five times as high as in North America, in contrast to the period 1999–2001 when overall cocaine seized in North America was higher than in South America. At the same time, data also show a shift from the Caribbean towards Central America in terms of the quantity of cocaine seized over the last two decades, reflecting a general shift towards trafficking cocaine from Colombia along the Pacific route to Central America and North America instead of via the Atlantic Ocean and the Caribbean.

North America, the world's largest consumer market for cocaine, reported strong increases in seizures of the substance in the period 2015–2020, as did Europe, the second largest consumer region, up to and including 2019, before stabilizing in 2020. Total quantities of cocaine seized in Asia and Africa peaked in 2019, while quantities seized in Oceania continued to trend upwards in 2020.

FIG. 7 Global quantity of cocaine seized, by region and subregion, 2020

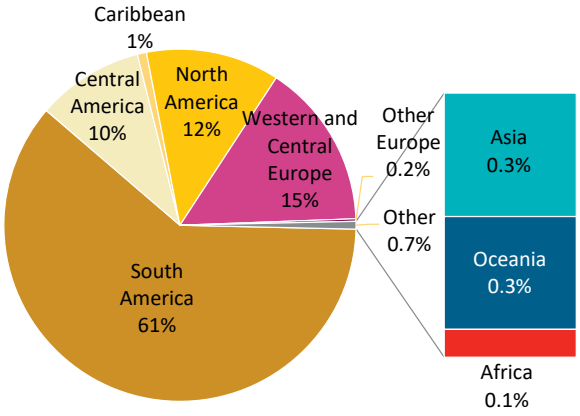
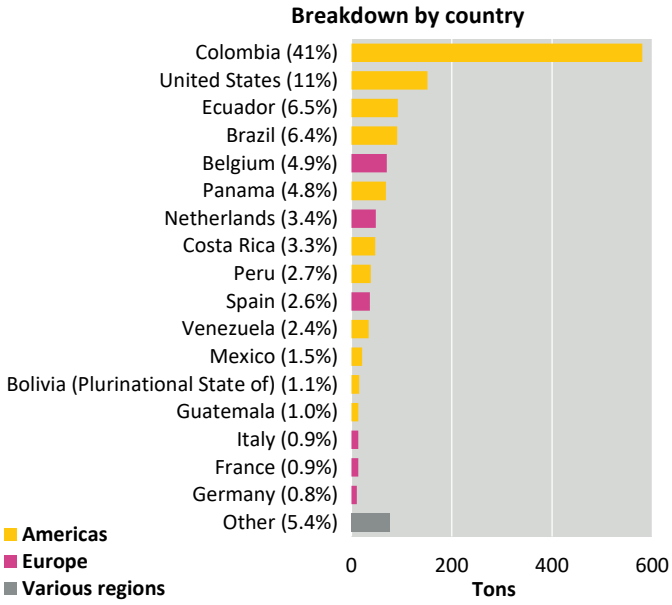


FIG. 8 Global quantity of cocaine seized, by country, 2020



Source: UNODC, responses to the annual report questionnaire.

Note: The percentages shown in Figures 9 and 10 represent the country's share of quantity of cocaine seized worldwide in 2020 by a region, subregion, or country. Quantities seized have not been adjusted for purity.

Cocaine trafficking: main routes continued to flow from the Andes to North America and Western and Central Europe

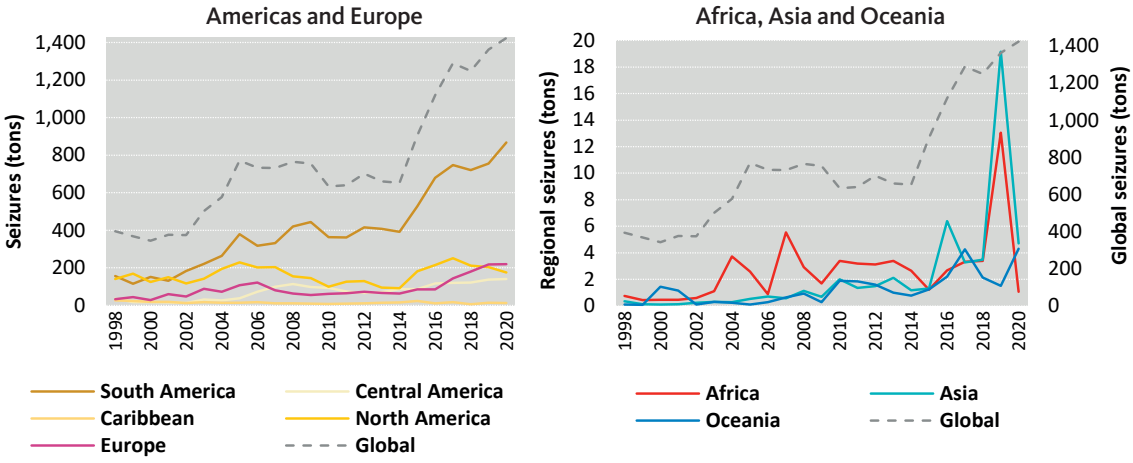
Most of the cocaine trafficking in the period 2016–2020 occurred along well-known routes: from Colombia along the Pacific coast to Central America and/or Mexico (often by ship and/or semi-submersible vessel), for onward trafficking to the United States; from the Andean region (primarily Colombia, to Western and Central Europe by boat, often in containers); directly over the Atlantic to destination ports in Europe for onward trafficking to final destinations; or via Brazil to Europe, either via the Atlantic or West Africa. Trafficking flows also run from the Andean region to other local markets in South America, notably Brazil and Argentina.

Almost all of the cocaine from the southern provinces of Colombia, along with a proportion of cocaine manufactured in the north, leaves the country via the Pacific Ocean.[22, 23] Estimates by United States authorities suggest that the bulk of the cocaine seized in the United States continues to originate in Colombia (90 per cent in 2018)[24] and 74 per cent of the cocaine from Colombia destined for North America in 2019 was shipped along the Eastern Pacific route.[25]

In 2020, the main departure country for shipments of cocaine at the global level, as reported by Member States to UNODC, was Colombia (23 mentions), followed by Brazil (21 mentions). Countries outside the Americas most frequently mentioned Brazil as the cocaine departure country, followed by Colombia, Ecuador, Peru and the Plurinational State of Bolivia, suggesting that Brazil is an important transit area for cocaine shipped outside of Latin America.

The countries in South America most frequently mentioned as departure countries for shipments of cocaine destined for Europe in 2020 were Brazil, Colombia and Ecuador. Departures from Colombia, Ecuador and Venezuela (Bolivarian Republic of), reflecting primarily departures of cocaine manufactured in Colombia,

FIG. 9 Trends in quantities of cocaine seized, by region and subregion, 1998–202



Source: UNODC, responses to the annual report questionnaire.

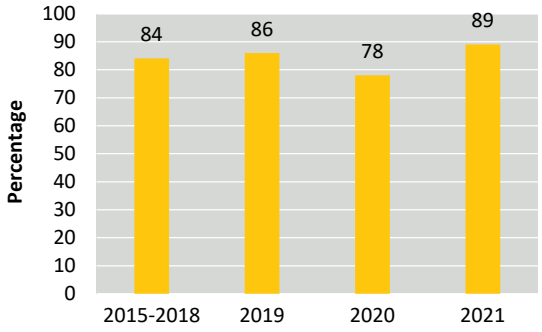
accounted together for 48 per cent of all mentions of South American departure countries by countries in Europe. Departures from Brazil, Bolivia (Plurinational State of) and Peru, mainly reflecting departures of cocaine manufactured in Peru and the Plurinational State of Bolivia, accounted together for 41 per cent of all such mentions by European countries.

Trends: individual seizures suggest an increase in, and geographical expansion of, cocaine trafficking by sea

Individual drug seizures suggest growing cocaine trafficking at sea. The share of cocaine quantities seized associated with maritime trafficking has increased from 84 per cent in 2015-2018 to 89 per cent in 2021 with a drop in 2020[26] when trafficking of cocaine by private aircrafts increased notably in Latin America to overcome Covid-19 restriction measures.[27]

Important departure points for shipping cocaine out of South America by sea include the Pacific seaports of Buenaventura, Colombia, and Guayaquil, Ecuador, and the Atlantic seaports of Cartagena, Colombia, and the Port of Santos in the State of Sao Paulo, Brazil.[28] Some smaller ports in northern Brazil have also assumed growing importance for cocaine shipments

FIG. 10 Share of cocaine seizures made at sea as recorded in individual seizures, 2015–2021



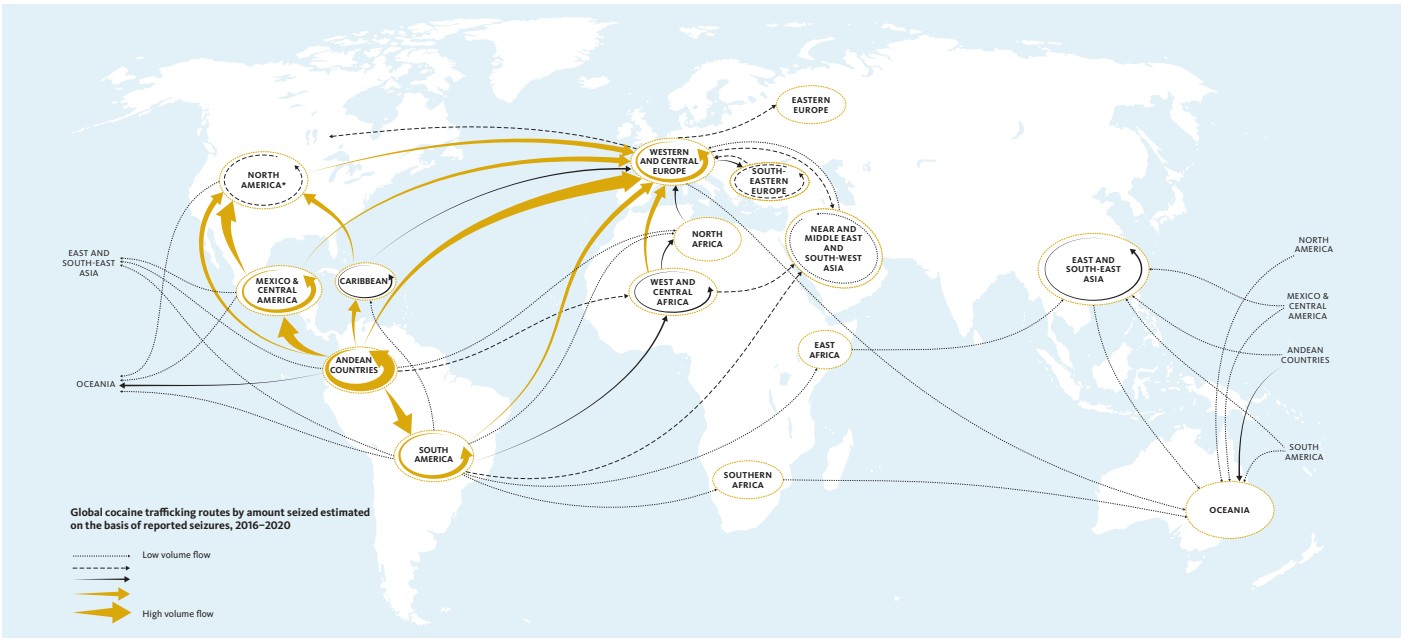
Source: UNODC, Drugs Monitoring Platform.

Note: Proportion of total cocaine seizures transported via sea, vessel or boat. Percentages are calculated based on quantities recorded in individual seizures with known transportation mode.

to Europe in recent years, as traffickers attempt to avoid improved controls and surveillance capacity implemented at the Port of Santos.[29]

According to seizure data, the main seaports used for the import of cocaine into Europe in the period 2020–2021 were those of Antwerp, Belgium, and Rotterdam, the Netherlands, as well as various seaports in Spain. However, almost all major European seaports serve as gateways to the region's consumer markets.[30]

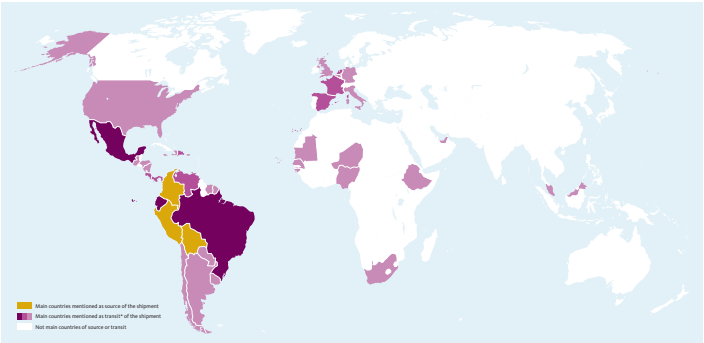
MAP 2 Main cocaine trafficking flows, as described by reported seizures, 2016–2020



The size of the route is based on the total amount seized on that route, according to the information on tracking routes provided by Member States in the annual report questionnaire, individual drug seizures and other ocial documents, over the 2016–2020 period. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered as broadly indicative of existing tracking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking: origins of the arrows indicate either the area of departure or the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin may not reflect the country in which the substance was produced. Please see the Methodology section of this document.

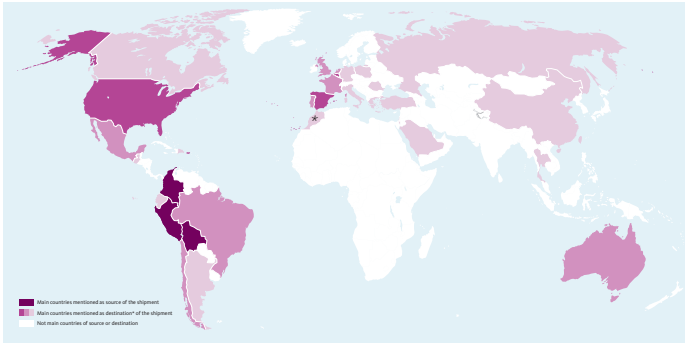
** North America excluding Mexico.*

MAP 3 Main countries identified as source and transit countries of cocaine shipments, 2016–2020



A darker shade indicates a larger amount of cocaine being seized with the country as source/transit of the shipment, according to the information on tracking routes provided by Member States in the annual report questionnaire, individual drug seizures and other ocial documents, over the 2016–2020 period. The source may not reflect the country in which the substance was produced. The main countries mentioned as source or transit were identified on the basis of both the number of times they were identified by other Member States as departure/transit of seizures, and the annual average amount that these seizures represent during the 2016–2020 period.

MAP 4 Main countries identified as source and destination countries of cocaine shipments, 2016–2020



A darker shade indicates a larger amount of cocaine being seized with the country as source/destination of the shipment, according to the information on tracking routes provided by Member States in the annual report questionnaire, individual drug seizures and other ocial documents, over the 2016–2020 period. The source may not reflect the country in which the substance was produced. The main countries mentioned as source or destination were identified on the basis of both the number of times they were identified by other Member States as departure or destination of seizures, and the annual average amount that these seizures represent during the2016–2020 period.

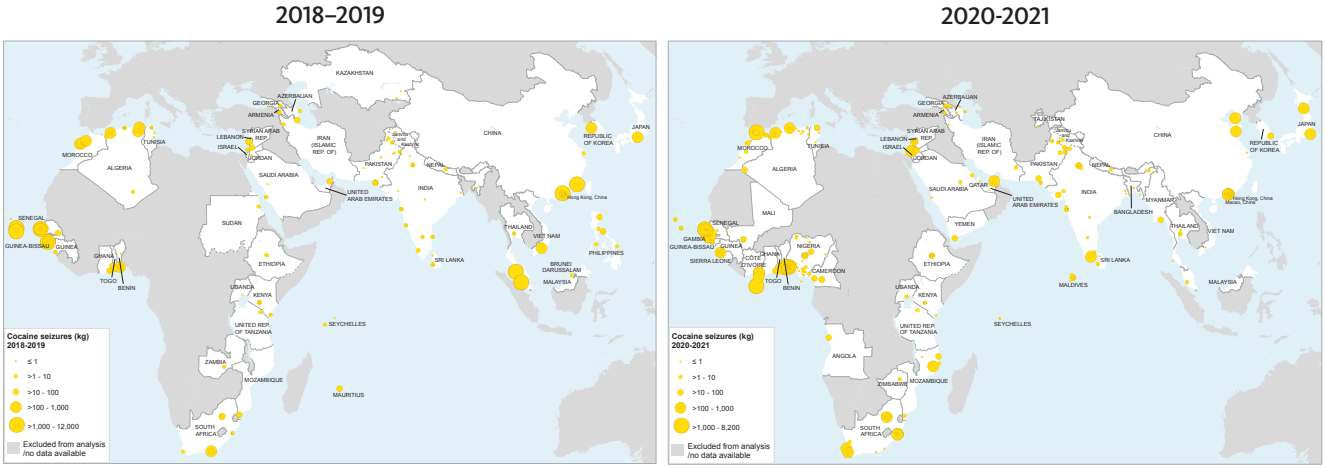
** Seizures data from several countries suggest that cocaine shipments in transit through Morocco to Europe are stopped on their way to Morocco or by the authorities in Morocco, which explains why the country is reported as a destination rather than a transit country, although the country is not the fina intended destination of the cocaine shipments.*

Source: UNODC elaboration.

Note: For more details on the criteria used, please see the Methodology section of this document.

The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations. The dotted line represents approximately the Line of Control Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

MAP 5 **Significant individual cocaine seizures in transit regions or emerging cocaine markets, Africa and Asia, 2018–2019 and 2020–2021**



Source: UNODC, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Cocaine seizures also suggest a geographical expansion in trafficking, with increased levels of cocaine trafficking in Africa and Asia over the last two decades. An increase was also observed in the period 2020–2021, with individual cocaine seizures recorded by UNODC indicating an increasing number of regions where major seizures were made.

Most cocaine seizures reported from Africa and Asia continue to be made in close proximity to coastlines.[31] There have been concentrations of substantial individual cocaine seizures in West Africa in recent years, notably between Cabo Verde and Guinea-Bissau, across the Gulf of Guinea, as well as in North Africa, reflecting ongoing cocaine trafficking to Western Europe. There was also a concentration of seizures in South Africa, and some along the eastern coast of Africa.

The main destination country in Europe for cocaine seized in Africa in the period 2015–2021 was Belgium (mostly relating to seizures made in Benin and Morocco in the period 2020–2021), followed by the Netherlands, the United Kingdom and France.[32]

By far the most important departure country in South America for cocaine shipments seized in Africa was Brazil, accounting for 70 per cent of quantities reported in individual seizures in the period 2015–2021. The next most important departure country in that regard was Ecuador (14 per cent), followed by Colombia (11 per cent).[33]

Elsewhere, there was a concentration of seizures in the Near and Middle East, and in parts of South, East and South-West Asia. While some of the significant cocaine seizures made in South-East Asia (notably in Malaysia) in 2019 reflected shipments to Australia, the bulk of the cocaine seized in Asia in the period 2020–2021 appears to have been intended mainly for domestic consumption in Asian countries.[34]

Brazil was the most important South American departure country for shipments of cocaine to Asia, accounting for 46 per cent of cocaine seized in individual drug seizures in Asia in the period 2015–2021, followed by Peru (24 per cent) and Ecuador (14 per cent). In the period 2020–2021, Brazil (72 per cent) and Panama (16 per cent) were the main countries of origin for such seizures.[35]

Data also identify several African countries among the departure countries for shipments of cocaine seized

Women in the cocaine supply chain

Women fulfil a wide range of roles in the global cocaine economy, including working in coca bush cultivation, transporting small quantities of drugs, selling to consumers and smuggling into prisons.[i] Although few women are coerced or deceived into trafficking, their involvement in illicit activities is often a response to pressing economic needs combined with a duty to care for dependent family members. Most women become involved in the lower levels of the supply chain without fully realizing the potential risks, such as the high probability of arrest, harsh penalties or health risks in the case of those who smuggle drugs inside their bodies (so-called "body packers").

Some women may be driven into cocaine trafficking by additional factors. Women who smuggle cocaine into prison are often led into the smuggling by a male inmate with whom they have romantic or family ties. For street-level drug dealers, extreme poverty and the need to provide for families are often the main push factors. A minority of female smugglers operating internationally come from higher socioeconomic backgrounds and smuggle cocaine for economic benefit. Women who reach leadership positions in the cocaine trade are likely to pursue a criminal career for the sake of achieving a sense of power and independence.

Women appear to be involved in the cross-border smuggling of drugs inside their bodies on the same scale as men, although this varies depending on the geographical region and the drug smuggled. Some countries along cocaine routes appear to be the origin of predominantly male "drug mules", while others involve a higher share of females.

Although there are cases in which women have leadership and managerial roles in the cocaine supply chain, women tend to occupy lower-ranking positions and benefit only marginally from illicit drug-related activities. Coca-growing activities may become the source of a relatively stable income and contribute to women's financial independence, however, they do not translate into sustainable livelihoods. Similarly, most of the women who engage in small-scale trafficking or the retail sale of cocaine remain poor. Furthermore, involvement in the cocaine economy leads to greater exposure to violent environments, threats and stigmatization, and can also lead to incarceration, which has a particular impact on women and their families.

[i] UNODC, "Women in the cocaine supply chain", Cocaine Insights 3 (Vienna, March 2022).

FOR MOST WOMEN, THE DECISION TO BECOME INVOLVED IN DRUG-RELATED ACTIVITIES IS SHAPED BY LIMITED CHOICES, EVEN THOUGH IT IS OFTEN VOLUNTARY

in Asia in the period 2020–2021, notably Ethiopia, Nigeria and South Africa, which each accounted for about 1 per cent of overall individual cocaine seizures in Asia. Notable departure countries in Asia included India, Qatar and the United Arab Emirates, which also each accounted for about 1 per cent of seizures made in Asia.[36]

Global use of cocaine

Global situation: multiple indicators point to a long-term increase in cocaine use, with a pause in 2020

Approximately 21.5 million people are estimated to have used cocaine at least once in the past year in 2020,[c] representing 0.4 per cent of the global population aged 15–64. The estimated prevalence of use has increased slightly since 2010, but the number of people who use cocaine has increased more, by 32 per cent, owing to global population growth. The trends have to be interpreted with caution, owing to the wide uncertainty intervals of these estimates.

All indicators suggest a long-term overall increase in cocaine use over the past decade, but information about trends in 2020 is inconclusive. Only fourteen countries provided new survey data on cocaine use, out of them eight for 2020, a year when methodological adjustments, particularly for face-to-face surveys, may have affected data collection and undermined comparability with earlier data.

In the European Union, surveys among people who use drugs occasionally suggest decreases in the use of powder cocaine,[37] but not of "crack" cocaine.[38] It is likely that occasional cocaine use, often linked to recreational activities, was affected by the COVID-19 pandemic and resulting social-distancing measures. However, regular use and use among people with substance dependence may have remained less affected by these factors.[39] More recent data suggest that decreases in use among occasional users may have been short-lived.

Alternative sources of information, albeit each with its own limitations, confirm the trend observed in global estimates concerning people who use cocaine. Qualitative reporting on cocaine trends provided by national experts, even in countries without population surveys, suggests an increasing trend in cocaine use over the past decade, with a halt between 2019 and 2020. This data source is limited by a lack of scientific rigor in some cases, but its advantage is that, in countries where quantitative assessments are not in place, expert reporting is able to rely on a variety of information sources, including small-scale studies.

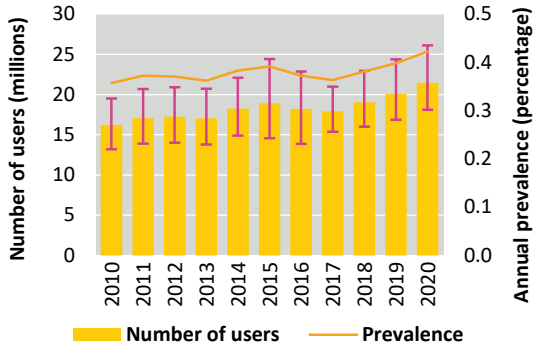
Data on people in drug treatment who mentioned cocaine products as their primary drug are limited to 26 countries, 20 of them in Europe, and show an increasing trend over the past decade. However, 70 per cent of the countries reported a decrease in the number of such patients in 2020, compared with the previous year, possibly confirming the general decrease in treatment delivery during the pandemic rather than a decrease in the number of people with cocaine use disorders.

Wastewater-based epidemiology offers an additional source of information on trends in consumption of cocaine,[d] although this method is limited to a relatively small number of cities, concentrated in Europe, followed by Oceania and Asia.[40] Long-term trend data with relatively good subregional coverage is only available for Western and Central Europe, although there were available paired data points for 2019 and 2020 for 66 cities across various regions. On average, the standardized quantity of findings of benzoylecgonine, the metabolite that signals the passing of cocaine through the human body, in wastewater dropped by 13 per cent from 2019 to 2020. However, the number of cities witnessing increased benzoylecgonine levels was almost identical to the number of cities experiencing decreases. As data became available for 2021, the trend seems to have returned to its pre-pandemic increasing trajectory. Overall, a 17 per cent increase in

c The methods used and their limitations are described in the methodological annex to the present report. See also the chapter entitled "Extent of drug use" in booklet 2 of the present report, *Global Overview of Drug Demand and Supply*.

d For more details about the approach and its limitations, see also the chapter "Extent of drug use" in booklet 2 of the present report entitled *Global Overview of Drug Demand and Supply*.

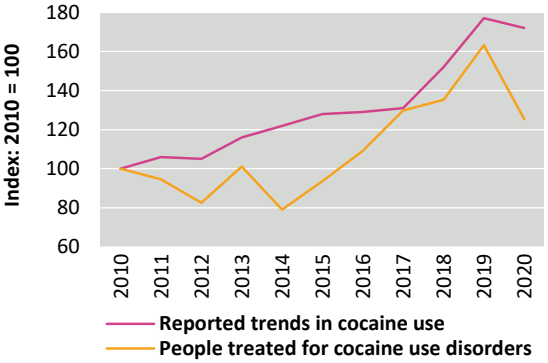
FIG. 11 Global estimates of cocaine use, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

Note: Annual prevalence of use among the population aged 15–64. Number of users in the past year aged 15–64. The global estimates of the extent of cocaine use reflect the best available information for the year 2020. Changes compared with previous years largely reflect the information updated by countries, for which new data on the extent of cocaine use were made available in the respective year. Therefore, the global and regional estimates presented in a given year are based on both the new estimates that were available for a particular country in the reference year and the most recent estimates available for the other countries. For 2020, the estimated global prevalence of cocaine use is based on estimates from 98 countries covering 57.7 per cent of the world's population. Of those, new data points were reported for 14 countries in 2020.

FIG. 12 Reported trends in cocaine use and treatment for cocaine use disorders, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

Note: The cocaine use trends index is based on qualitative information on trends in cocaine use reported by Member States (on average, 64 countries per year in the period 2010–2020). The trend line is calculated on the basis of the number of countries reporting increases minus the number of countries reporting decreases (2 points for "large increase", 1 point for "some increase", 0 points for "stable", -1 point for "some decrease" and -2 points for "large decrease"). The index of people treated for cocaine use disorders (cocaine as primary drug) includes all countries with available trends data with less than three data points missing in sequence: 20 countries in Europe, 4 in the Americas and 2 in Asia. Missing data were interpolated by using the geometric mean (if between existing data points) or extending the existing trend (if the values were marginal). See the methodological annex to the present report for more information.

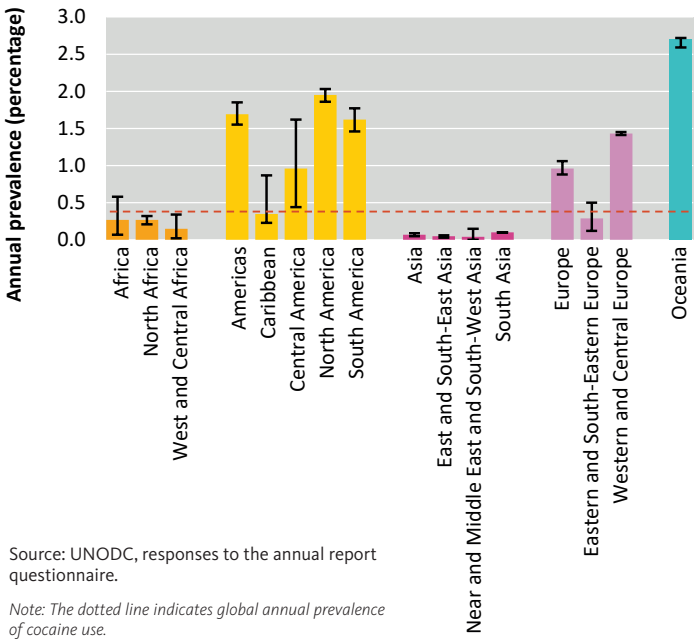
average loads was observed in 66 cities with available paired measurements. While 19 cities have recorded a decline and 9 cities a stable situation,[e] 38 cities witnessed increases between 2020 and 2021.[f]

Regional patterns of cocaine use

The prevalence of cocaine use and the number of people who use cocaine is uneven across the globe, with the highest prevalence levels found in Oceania, North America, Western and Central Europe and South America.

Quantities of benzoylecgonine detected in wastewater largely confirm this regional concentration of use, except in the case of Australia, where low levels of the metabolite in wastewater, contrasting with the highest annual prevalence of use, suggest that most people

FIG. 13 Cocaine use, by region and subregion, 2020



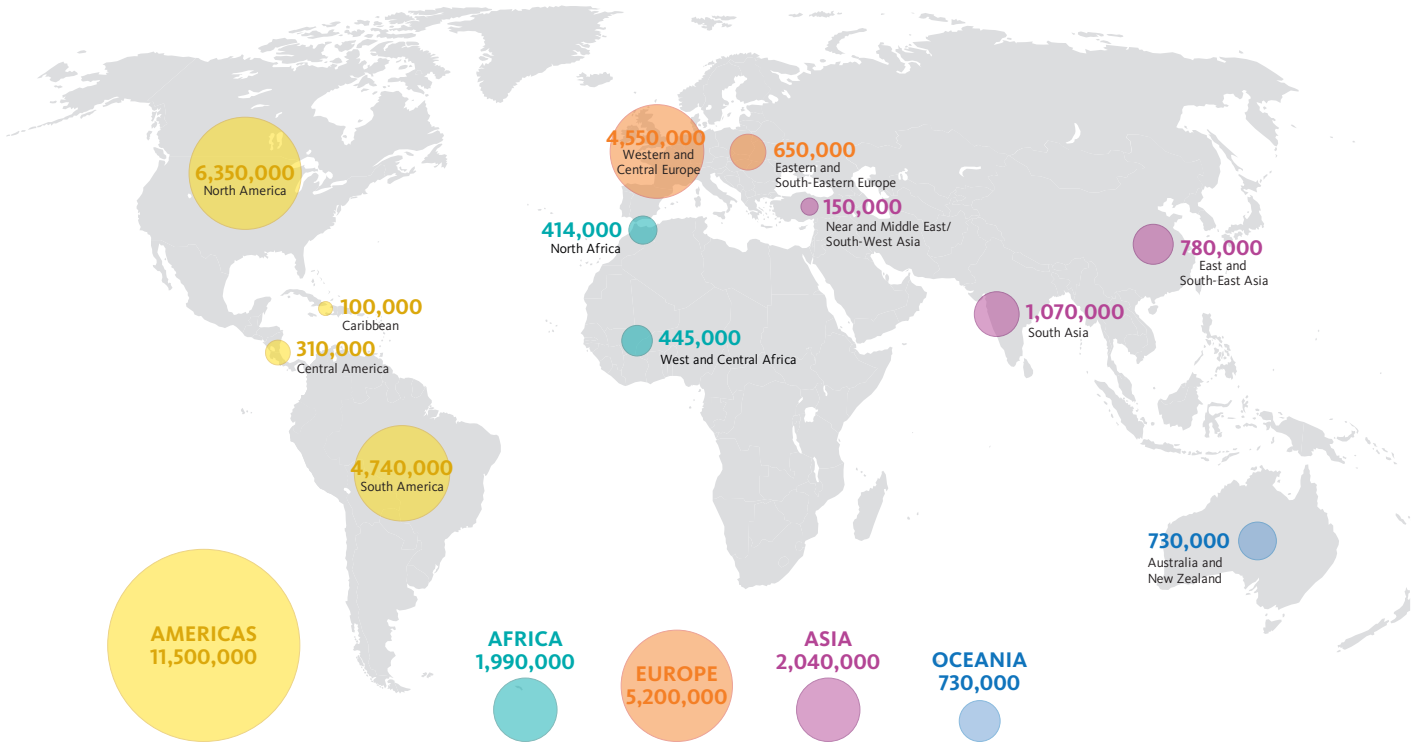
Source: UNODC, responses to the annual report questionnaire.

Note: The dotted line indicates global annual prevalence of cocaine use.

e Defined as 0 to 5 per cent change in 2021 from the loads measured in 2020.

f UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe and scientific literature.

MAP 6 **Estimated number of people who used cocaine in the past year, by subregion, 2020**



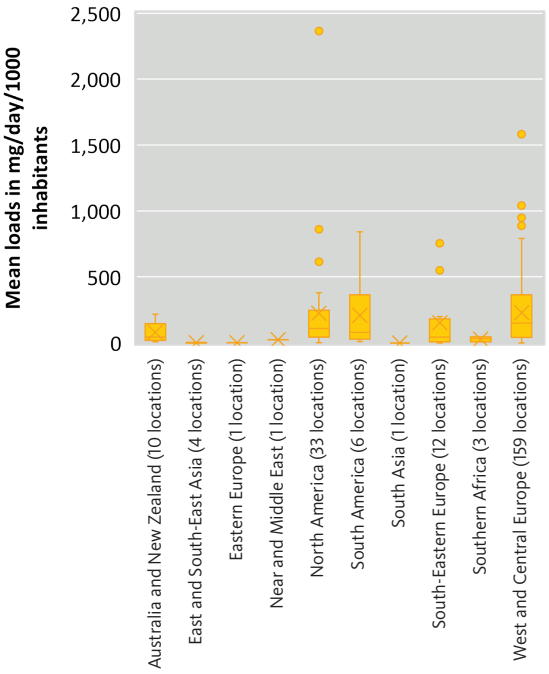
Source: UNODC, responses to the annual report questionnaire.

using cocaine actually consume small quantity in total[g], compared with other countries. Wastewater analysis also indicates the possibility of higher cocaine consumption than what is estimated through household surveys in South America and suggests that cocaine consumption could also be higher in some cities in South-Eastern Europe, particularly in Turkey, than reflected in recent household surveys. It further suggests that there are several cities with a lower prevalence of cocaine use, even within subregions with relatively high levels of cocaine consumption.

g Which may testify to more common occasional use rather than regular use.

Data from both household surveys and existing wastewater analysis suggest that the level of cocaine use is relatively low in other parts of the world. However, no wastewater analysis is available in many countries in Asia and Africa, where cocaine may be becoming more common on the drug market more recently. Mid-term increases in cocaine use have been reported in Africa, apart from South Africa, in the past five years through qualitative assessments of trends in use and data on the provision of drug treatment.[41] Asia is the continent with the lowest estimated prevalence of cocaine use, but recent survey data are lacking from most countries. The high population density of Asia means that, despite the low prevalence of use, the region is home to about 2 million past-year users of cocaine.

FIG. 14 Variability in benzoylecgonine (cocaine metabolite) loads in selected cities with available data, by subregion, 2015–2021



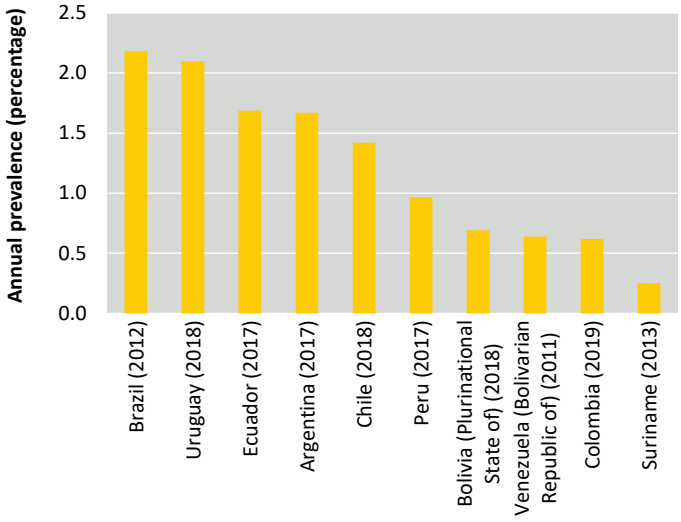
Source: UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe and on scientific literature.[42]

Note: Average quantity of benzoylecgonine found in wastewater in 230 locations. Comparability between SCORE group estimates and published estimates may not be complete. Population-normalised loads are the amounts of the target drug residue (in this case the cocaine metabolite benzoylecgonine) entering the wastewater treatment plant, divided by the population served by the wastewater treatment plant, which shows the amount of a substance consumed per day per 1 000 inhabitants. Small circles represent outliers (locations with higher mean loads than 1.5 times the interquartile range of values for a given subregion).

South America: a variety of cocaine products are used, but associated harm is likely to be mostly related to smokable forms of cocaine

Cocaine is produced, trafficked and used in South America, where it is estimated that, in 2020, 1.6 per cent of the population aged 15–64, or 4.7 million people, were past-year users of cocaine products. This estimate is significantly higher than the estimate for 2010, when the estimated prevalence was 0.7 per cent, corresponding to 1.8 million users.

FIG. 15 Prevalence of use of cocaine products, by country, South America, latest year available



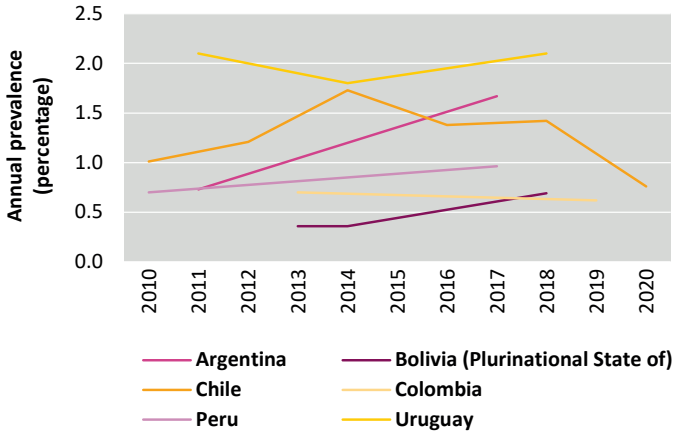
Source: UNODC, responses to the annual report questionnaire.

Note: Data are for the general population aged 15–64, except in the case of Bolivia (Plurinational State of), Colombia, Ecuador, Suriname, and Venezuela (Bolivarian Republic of) where the members of the population surveyed were between the ages of 12 and 65, and Uruguay, where the members of the population surveyed were between the ages of 15 and 65.

South American countries have reported varying trends in the prevalence of cocaine use over the past decade, with the largest increase reported by Argentina. However, because the percentages analysed are relatively small, ranging between 0.5 and 2 per cent of the adult population in countries with available household survey data over the past decade, statistical uncertainty has to be considered in the interpretation of the trend. While in some countries, the prevalence of cocaine use seems to be relatively stable, it may be increasing in other countries.

Chile is the only country with available survey data for 2020, when it observed a decrease in the use of cocaine. This trend was described as a large decrease of more than 10 per cent and concerned all types of cocaine products.[43] However, two subsequent large-scale nationwide online studies showed that the decrease had been short-lived, with cocaine use in Chile in 2021 returning to roughly the same level as before the COVID-19 pandemic.[44]

FIG. 16 Trends in cocaine use in countries with available time series data, by country, South America, 2010–2020



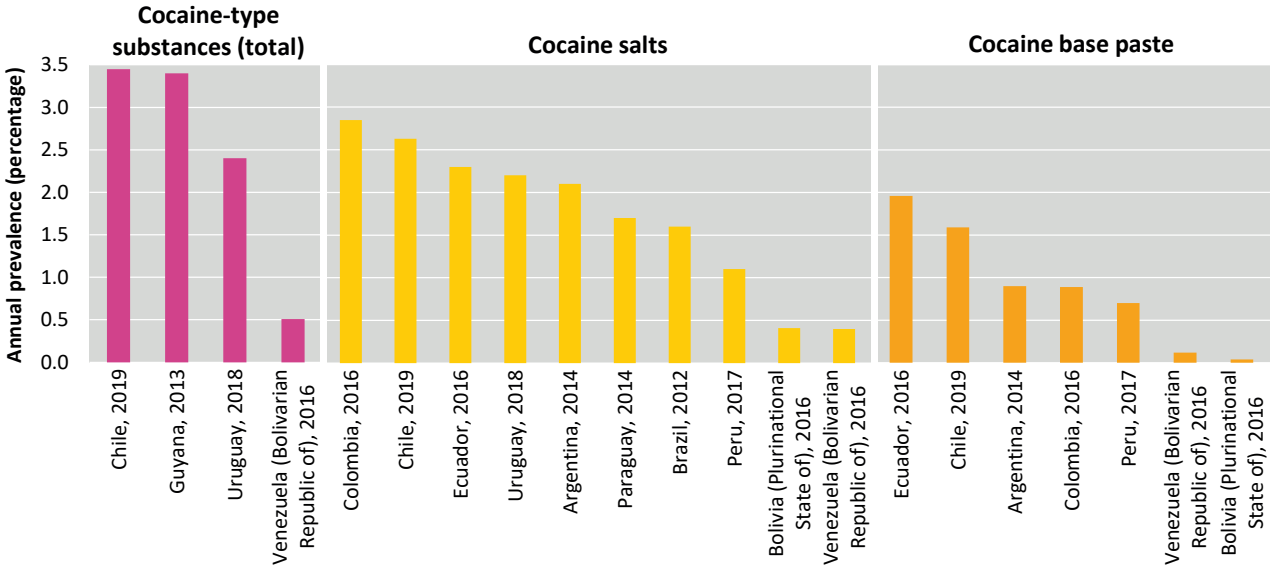
Source: UNODC, responses to the annual report questionnaire and reports from Governments.

Note: Data are for the general population aged 15–64, except in the case of Bolivia (Plurinational State of) and Colombia, where the members of the population surveyed were between the ages of 12 and 65, and Uruguay, where the members of the population surveyed were between the ages of 15 and 65.

Products derived from the coca plant have existed in South America for thousands of years[45] and more cocaine products are available in the region than in any other part of the world. Some products represent a truly regional phenomenon (although worries about the spread of their use do exist[46]), for example, cocaine paste,[47] a smokable and highly addictive cocaine product. Smoking cocaine products is particularly harmful as it is associated with more frequent use and harmful patterns of use.[48] Moreover, it often occurs in marginalised groups in the subregion.[49]

Past-year use of cocaine paste was reported by 0.3 per cent of respondents to a household survey conducted in Chile in 2020 and by the same proportion of respondents in Uruguay in 2018. Against a background of overall elevated levels of use of cocaine products, the use of cocaine paste is relatively high among high-school students in South America. A recent study of regular users of cocaine paste in Santiago de Chile found that 98 per cent of the 398 people interviewed (18 per cent of whom were women) met criteria for substance use disorders related to cocaine paste. It

FIG. 17 Use of different cocaine products among the school population, by country, South America, latest year available



Source: UNODC, responses to the annual report questionnaire.

Note: Data are for the school population aged 15–16, except in the case of Bolivia (Plurinational State of) (18-25), Brazil (14-17), Ecuador (12-17), Guyana (secondary school students of unspecified age), Paraguay (school students aged 12 and above), Peru (14-16), Venezuela (Bolivarian Republic of) (12-17), and Uruguay (13-17).

Variability of cocaine products consumed worldwide

Cocaine products bought by consumers worldwide can differ in significant ways. First, the chemical nature of the primary psychoactive substance can be found in two main forms, base and salt, and second, the products may contain varying quantities of additives, impurities and residues present alongside cocaine. In practice, knowing the derivation of the product is crucial to fully understanding its characteristics. Together, these factors determine important properties such as physical characteristics, routes of administration, purity levels and potential for harm.

There are three main families of products derived from base and salt forms:

(a) Manufacturing process consumer products (MCPs) derived from coca paste and cocaine base;

(b) Consumer products based on the hydrochloride salt of cocaine (typically in powder form);

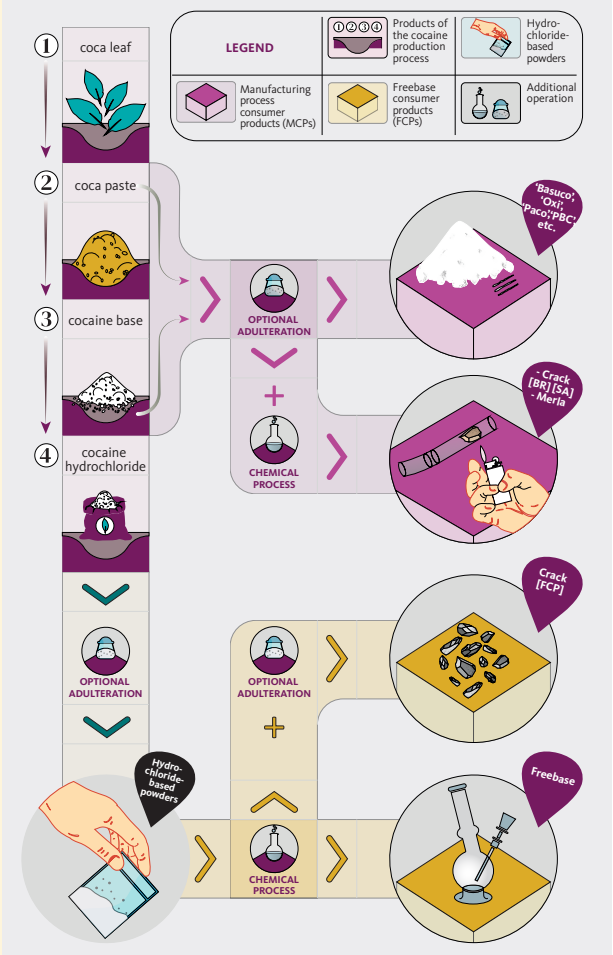
(c) Freebase consumer products (FCPs) derived by converting cocaine salt back to base form[i]

Although estimates of the prevalence of cocaine use are far from comprehensive, available data from household surveys suggest that the majority of people who use cocaine use it in its salt form.[i] However, the relative importance of MCPs and FCPs remains notable, both in terms of the number of users, who are possibly underrepresented in household surveys,[ii] and in terms of associated harms, given the higher propensity for dependence and more severe consequences when cocaine is smoked, in comparison with intranasal use.[iii, iv, v]

Hydrochloride-based powders are predominantly consumed by insufflation ("snorting").[vi] Both MCPs and FCPs contain cocaine in its base form and lend themselves to smoking. This is done by a variety of means, including the use of dedicated or *ad hoc* pipes, mixed into cigarettes containing tobacco or cannabis, vaporization on aluminium foil (sometimes referred to as "chasing the dragon"), electronic cigarettes and makeshift equipment improvised from everyday items.[i] The effects of smoking cocaine products are felt almost immediately, producing a more intense but more short-lived euphoric feeling ("rush").[vii]

In addition, injection is used as a means of administration by a minority of users, both for cocaine hydrochloride, which is soluble in water, and for cocaine in base form, which can be dissolved by mixing it with a weak acid such as vinegar or lemon juice.[i]

Schematic representation of the relationship between the different cocaine products



Source: UNODC, *Cocaine – A Spectrum of Products*, Cocaine Insights 2 (Vienna: UNODC, 2021).

Note: [FCP] stands for "freebase consumer product"; [BR] for Brazil; [SA] for South America.

What distinguishes FCPs from MCPs is that they are prepared from cocaine hydrochloride and not from coca paste or cocaine base, which precede cocaine hydrochloride in the manufacturing process. As a result, MCPs and FCPs

differ in terms of the impurities, adulterants and residues present.

In North America and Europe, the prevalent form of FCP is "crack" cocaine, to be distinguished from cocaine freebase, another FCP, whose use was documented in the United States in the 1970s.[viii] The conversion from cocaine hydrochloride to FCP is relatively simple, especially for "crack" cocaine but also for cocaine freebase, and is sometimes carried out by the users themselves,[ix] who may conflate the different FCPs; hence, it cannot be excluded that the use of cocaine freebase is currently underreported.

MCPs are mainly consumed in South America and adjacent regions. Products are marketed under street names such as "basuco", "pasta base", "merla", "paco" and "crack". These terms do not always refer to clearly defined products and may mean different things in different countries; for example, the term "crack" in South America likely includes smokable cocaine products that have not been derived from cocaine hydrochloride.[ix]

i UNODC, *Cocaine – A Spectrum of Products*, Cocaine Insights 2 (Vienna: UNODC, 2021).

ii Janssen, E., Cadet-Taïrou, A., Gérome, C. and Vuolo, M., "Estimating the size of crack cocaine users in France: Methods for an elusive population with high heterogeneity", 2020.

iii Hatsukami D. and Fischman, M. "Crack Cocaine and Cocaine Hydrochloride: Are the Differences Myth or Reality?" Journal of the American Medical Association, vol. 276, n° 19, 1996.

iv Colussi-Mas, J., Bellemin, B., Bernard, N. and Descotes, J., "Le crack : une forme fumable de cocaïne", La Lettre du Pharmacologue, vol. 17, n° 5, Oct-Nov-Dec, 2003.

v WHO and UNICRI, The Natural History of Cocaine Abuse: a case study endeavour, World Health Organisation and United Nations Interregional Crime and Research Institute, unpublished, September 1995. Available online at: https://www.tni.org/files/article-downloads/200703081415045872_0.pdf.

vi Cocaine hydrochloride will decompose before vaporizing and is therefore not well-suited for smoking.[vii] Lizasoain, I., Moro, M. and Lorenzo, P. "Cocaína: aspectos farmacológicos", Adicciones, vol. 14, n° 1, 2002.

viii See, for example, Siegel, R., "Cocaine Free Base Use", Journal of Psychoactive Drugs, vol. 24, issue 2, 1982.

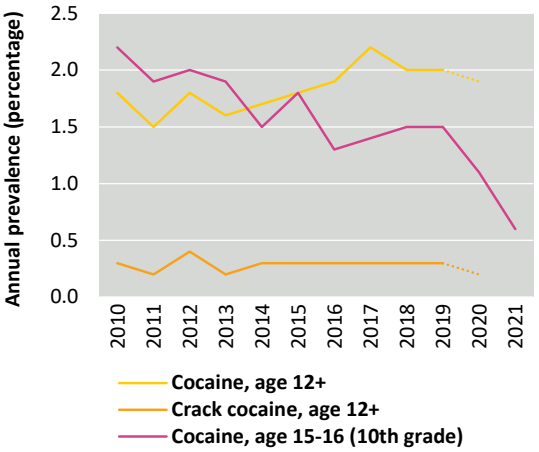
ix EMCDDA and Europol (2019), EU Drug Markets Report 2019, European Monitoring Centre for Drugs and Drug Addiction and Europol, Publications Office of the European Union, Luxembourg.

also found that polydrug use and polydrug dependence (most often involving alcohol and cannabis) were common.[50] People who used cocaine paste had done so for a median of 25 days in the past month, with a median of 56 doses per week, and had spent 65 per cent of their monthly income on cocaine paste.[51]

The prevalence of cocaine-related harms to health is relatively high in the region, compared with harms from other drugs. Cocaine use disorders were reported as the main reason for entering drug treatment in Argentina, Chile and Uruguay, and as the second most common reason in Brazil, and they also played a significant role in Peru and Ecuador.[52] In Uruguay, almost 90 per cent of treatment requests in 2020 were related to the use of cocaine products as the primary drug. People in drug treatment predominantly used cocaine paste (53 per cent) and cocaine hydrochloride (38 per cent), while a minority used "crack" cocaine (8 per cent). About two thirds of people in drug treatment in Chile named cocaine products as their primary drug. Of all the people treated (15,517 in 2020), almost 10,000 were people who used cocaine products, with 60 per cent reporting the use of "crack" cocaine, almost 40 per cent reporting the use of cocaine powder (hydrochloride) and only 0.06 per cent reporting the use of cocaine paste.

One study estimates the prevalence of the regular use of "crack" cocaine in the metropolitan areas of Brazil at 0.81 per cent, with people who use the substance often part of vulnerable and marginalized groups.[53, 54] A study on the burden of mental health disorders attributable to cocaine use in Brazil in the period 1990-2019 has found significant increases across all indicators used,[55] but most pronounced for the number of years of life lost due to premature death.[56] Brazil reported cocaine products to be the most common cause of deaths related directly to drugs, although the total number of reported drug-related deaths was comparatively low, amounting to 632 deaths, of which 283 were cocaine-related, in 2020.[57] Cocaine products may also be an important factor in drug-related deaths in other South American countries, but monitoring systems are often not in place.

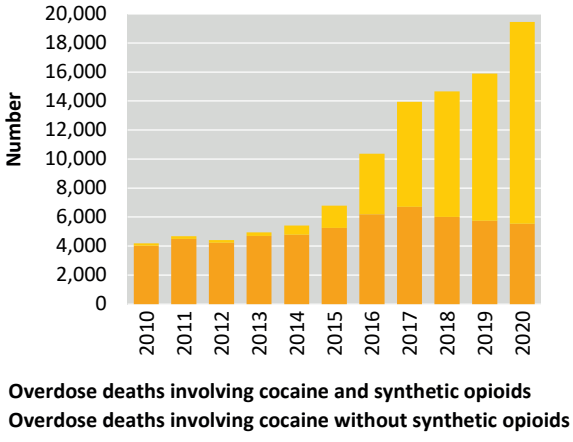
FIG. 18 Trends in cocaine use by age group and type of product, United States, 2010–2021



Sources: United States, Substance Abuse and Mental Health Services Administration, *Results from the 2020 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, Center for Behavioral Health Statistics and Quality, 2021); and D. Lloyd Johnston et al, *Monitoring the Future: National Survey Results on Drug Use 1975–2021 Overview: Key Findings on Adolescent Drug Use* (Michigan: Ann Arbor: Institute for Social Research, University of Michigan, 2022).

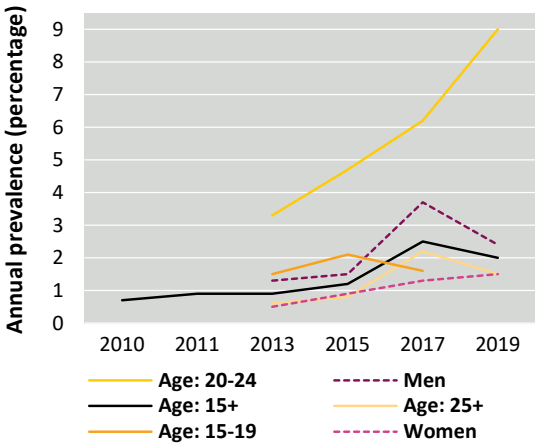
Note: Because of methodological changes in 2020, the comparability between 2020 estimates and earlier years is unknown. Therefore, a dotted line is used. Data on people aged 12+ are from the National Survey on Drug Use and Health. Data on people aged 15-16 are from ***Monitoring the Future: National Survey Results on Drug Use 1975–2021****.*

FIG. 19 Cocaine overdose deaths, United States, 2010–2020



Source: United States, Centers for Disease Control and Prevention, National Center for Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC Wonder), "Multiple cause of death (detailed mortality) 1999–2020".

FIG. 20 Trends in cocaine and "crack" cocaine use in Canada, by age group and sex, 2010–2019



Source: Canada, Health Canada "Canadian Alcohol and Drugs Survey (CADS): Summary of Results for 2019

Note: Trends by sex among people aged 15 and over.

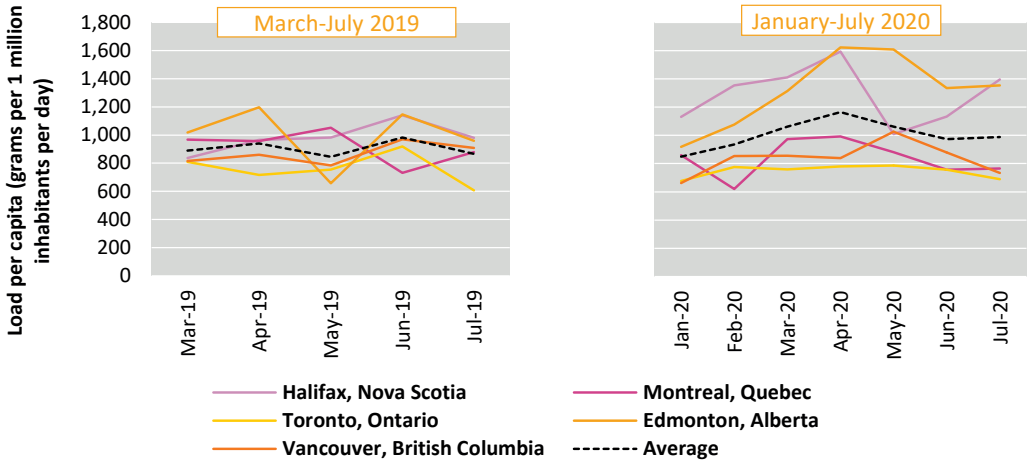
North America: the long-term moderate increase in cocaine use paused in 2020

North America is the world's largest market for cocaine. The prevalence of past-year cocaine use in 2020 is estimated at 2 per cent among the population aged 15–64, translating to 6.4 million past-year users.

The use of powder cocaine is most prevalent, but the use of "crack" cocaine is also common and possibly underreported owing to associated stigmatization. People who use "crack" cocaine intensively and who are socially disadvantaged may also be outside the sampling frame of household surveys because they do not live at a fixed address or are institutionalized.

About 2 per cent of the population aged 12 years and older in the United States[58] (in 2019 and 2020) and 2 per cent of those aged 15 and above in Canada (in 2019) had used cocaine in the past year.[59] These prevalence rates are much higher than in Mexico, where 0.8 per cent of inhabitants aged 12–65 reported having used cocaine in the past 12 months in 2016, the latest year for which data were available.

FIG. 21 **Benzoylecgonine (cocaine metabolite) in wastewater in selected cities in Canada, 2019–2020**



Source: Canada, Canadian Wastewater Survey, drug component.

Note: Wastewater samples were collected daily for a period of 7 days, starting on the second Monday of each month.

In both Canada and the United States, a gradual, steady increase in the self-reported use of cocaine was observed over the past decade. The increase was most pronounced among young adults in Canada aged 20–24 between 2013 and 2019. A recent study from the United States that analysed several indicators concluded that the increase was likely driven by people who used cocaine occasionally, because both the prevalence of cocaine use disorders and past-year cocaine injection have shown signs of decrease.[60]

This trend was halted in 2020 by a small decrease observed in the United States, the only country in the subregion with available survey data for that year. The change in use may have occurred as a result of the COVID-19 pandemic and related stay-at-home orders and their disruptive effect on cocaine transit and distribution, as well as the closure of bars and other recreational venues where cocaine is typically consumed. Caution in interpretation is warranted, because the pandemic has also influenced data collection, which moved to online surveys, and the comparability with data collected in previous years is unknown.[61] Data from wastewater analysis in Canada show that cocaine consumption began to decrease shortly after the implementation of social-distancing measures in March 2020, before rebounding to exceed pre-pandemic levels by July 2020.

In the United States, the decrease in cocaine use was also reflected in a survey among high school students, including those aged 15–16. Among this age group, the pandemic has likely reversed the trend of moderate increase in cocaine use since 2016. The exact reasons for this decrease may be diverse, but possible factors include family involvement (increased parental supervision), changes in availability and in peer pressure,[62] and decreased opportunities to experiment with substances at social events.

The relatively high levels of cocaine use in the subregion are associated with significant cocaine-related harm. In the United States, over 110,000 drug treatment admissions involving cocaine as the primary drug used were recorded in publicly funded facilities in 2019 (the latest year for which data were available), constituting almost 9 per cent of all drug treatment episodes. There has been a slight decrease in this proportion over the past decade.[63] Cocaine was the drug most reported upon entry into treatment in Canada in 2018 (the latest year for which data were available), closely followed by cannabis.[64] In Mexico, cocaine products represent the second most used group of substances

and the fourth most reported primary drug upon entry into drug treatment with 12 per cent of people in treatment reporting it in 2020.[65]

The United States has experienced an almost fivefold rise in cocaine-related deaths since 2010, largely attributable to deaths that also involved an opioid, most notably synthetic opioids such as fentanyls. This trend may be in part owing to polydrug use patterns. However, the impact of a recently reported trend of lacing cocaine with synthetic opioids, mainly fentanyl, could be substantial;[66] deaths involving cocaine alone, without the presence of synthetic opioids, have declined slightly since 2017. In Canada, in post-mortem analyses of "apparent stimulant toxicity deaths", which are predominantly related to cocaine, opioids were found to be present in 83 per cent of cases in 2020.[67]

Western and Central Europe: increases in cocaine use and availability over the past five years paused by the COVID-19 pandemic

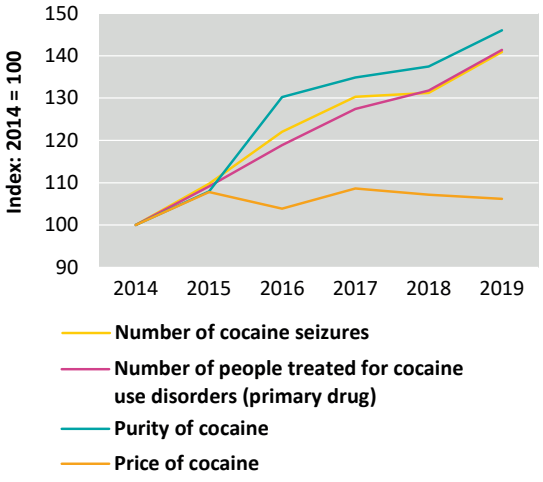
The prevalence of the use of cocaine products among the adult population in Europe in 2020 was estimated at 1 per cent, more than double the global average. In the European Union, cocaine is the second most used drug after cannabis, and the third most frequently reported primary drug upon entry into drug treatment.[68] The use of cocaine is concentrated mainly in Western and Central Europe, with an estimated prevalence of 1.4 per cent, or 4.6 million past-year users, making the subregion the second largest market for cocaine in the world.

There have been signs of long-term expansion of the cocaine market in Western and Central Europe, with purity increasing over the past decade, alongside increases in seizures and in treatments for cocaine use disorders, while prices have remained relatively stable. This increase in use and availability of cocaine has been clearer since 2015 but paused in 2020 with the onset of the COVID-19 pandemic. It appears to again be increasing starting from 2021.

Wastewater analysis confirms this long upward trend, as it shows an increase in the quantity of benzoylecgonine detected in the region over time. Increased demand for treatment may also suggest increased intensity of cocaine use and/or an increase in the number of users, including relapses. The United Kingdom reported a substantial increase in cocaine-related deaths between 2010 and 2019.[69]

The use of powder cocaine is most prevalent, although "crack" cocaine is also used, often among marginalized groups. There may have been an increase in "crack" cocaine use in several European countries in recent years.[70,71] In 2019, 15 per cent of requests for treatment for cocaine use disorders in the European Union were related to "crack" cocaine,[72] rising to 35 per cent in the United Kingdom.[73] The use of "crack" cocaine may be underreported upon entry into treatment owing to the high level of associated stigma or a lack of knowledge of the difference between "crack" and powder cocaine.[74] The use of other forms of cocaine has not been observed in Europe. The most common route of cocaine administration in the European Union is intranasal insufflation ("snorting"), followed by smoking. Injecting is far less common,[75] although the United Kingdom recorded increases in injection of the drug as a method of administration.[76]

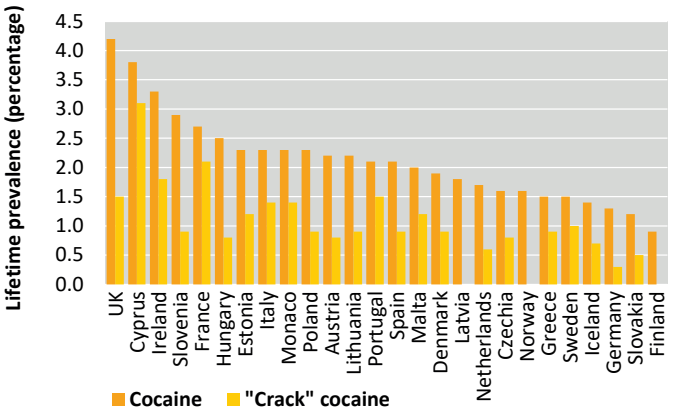
FIG. 22 **Trends in indicators of cocaine availability and use, Western and Central Europe, 2014–2019**



Source: UNODC analysis of data from EMCDDA.

Note: The indexes represent the percentage of change in comparison with 2014 (where the value for 2014 equals 100 per cent).

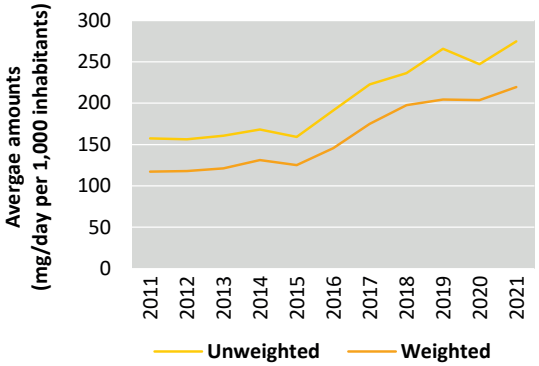
FIG. 23 **Use of cocaine and "crack" cocaine among high school students aged 15–16, Western and Central Europe, 2019**



Sources: EMCDDA and European School Survey Project on Alcohol and Other Drugs, *ESPAD Report 2019: Results from the European School Survey Project on Alcohol and Other Drugs*, EMCDDA Joint Publications Series (Luxembourg, Publications Office of the European Union, 2020). Data for the United Kingdom are from United Kingdom, NHS Digital, "Smoking, drinking and drug use among young people in England 2018", 20 August 2019.

Note: Data for the United Kingdom only include students who were 15 years of age and were collected in the year 2018.

FIG. 24 **Benzoylecgonine (cocaine metabolite) found in wastewater, 80 cities in Western and Central Europe, 2011–2021**



Source: UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe.

Note: Average quantity of benzoylecgonine found in wastewater in 80 cities, unweighted and weighted by the population of the sites: assumption of gradual increase or decrease in years in which no analysis took place in a city and there was no change since the latest available data. Owing to the change in the number of cities and sites, the information presented here is not comparable with that presented in the previous editions of the World Drug Report.

School surveys conducted in 2019 suggest a relatively high percentage of students aged 15–16 who had used cocaine at least once, and also a higher percentage of students who had tried "crack" cocaine at least once, compared to the adult population.

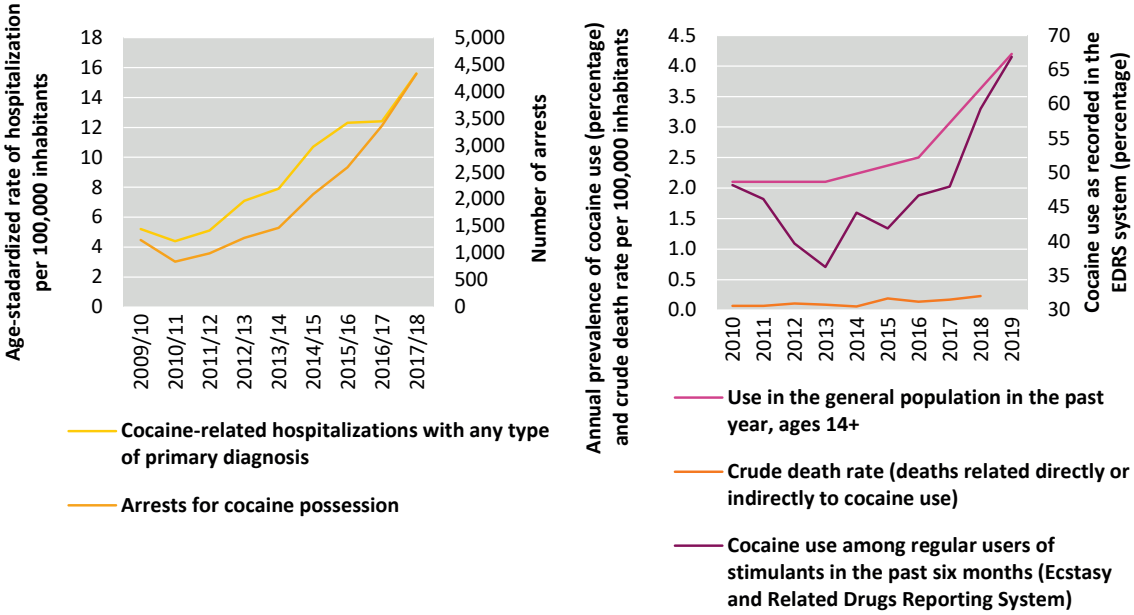
Data for 2020 and 2021 point to a continuous increase in indicators of availability of cocaine (i.e. seizures)[77] and a rebound in the overall consumption of the drug after data in some cities indicated a short-lived pause or even a decrease in 2020 (i.e. the presence of benzoylecgonine in wastewater). A recent web-based survey among people who use drugs across 22 countries in Western and Central Europe indicates that cocaine powder was the substance exhibiting the second largest decrease in use since the start of the COVID-19 pandemic, after MDMA.[78] However, in the case of "crack" cocaine, the proportion of users who reported using more since the onset of the pandemic was slightly higher than those who reported using less.[79] Social-distancing measures and the closure of recreational venues may have played a role in the decrease in use of powder cocaine in some parts of Western and Central Europe in 2020.

Oceania: use of cocaine in Australia was largely unaffected by the COVID-19 pandemic, and the rate of cocaine use in New Zealand remained relatively low

Oceania continues to have the highest rate of prevalence of cocaine use in the world. An estimated 2.7 per cent of the population aged 15–64, or 730,000 people, reported having used the drug in the past year in 2020. Most users are concentrated in the Australia and New Zealand subregion, where the estimated prevalence of use is 3.6 per cent. In Australia, 4.2 per cent of inhabitants aged 14 and above reported past-year cocaine use in 2019. Almost all of the cocaine used in the subregion is powder cocaine (99 per cent)[80, 81] and the most common route of administration in Australia is snorting, followed by swallowing.[82]

Despite the high number of people who have used cocaine at least once in the past year, wastewater

FIG. 25 Trends in cocaine availability, use and harms in Australia, 2009–2019



Sources: Nicola Man and others, "Trends in cocaine use, markets and harms in Australia, 2003–2019", *Drug and Alcohol Review*, vol. 40, No. 6 (February 2021); and Australian Institute for Health and Welfare, Reports and data, Alcohol, Alcohol, tobacco and other drugs in Australia, "Figure YOUNGER3: Proportion of people with recent use of illicit drugs, by drug type and age group, 2001 to 2019 (per cent)". Available at https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/priority-populations/younger-people.

Note: EDRS stands for Ecstasy and Related Drugs Reporting System.

analysis shows lower per capita consumption of cocaine in Australia than in South and North America or Western and Central Europe.[83, 84] This likely means that people who use cocaine in Australia consume it in quantities that are lower on average than in other subregions, possibly due to the larger share of occasional users among people who use cocaine in Australia.[85]

Several indicators suggest a gradual increase in cocaine availability, use and harms over the past decade in Australia. A national household survey found an increase in the proportion of users who used the drug at least monthly, from 10.1 per cent in 2016 to 16.8 per cent in 2019.[86] The same survey detected past-year cocaine use in many population groups, regardless of socioeconomic status or education level, which had more than doubled between 2016 and 2019.[87] Among people who use stimulant drugs regularly, the prevalence of cocaine use and the number of days for which the drug is used have been increasing since 2013. Yet, the median number of days of use in 2021 was five in the past six months.[88] Wastewater analysis has also shown long-term upward trends in cocaine consumption in Australia.[89]

Less than 2 per cent of treated people who use drugs mentioned cocaine as their primary drug in 2019/20,[90] but a recent study analysing multiple indicators in the period 2003–2019 concluded that Australia has experienced a long-term increase in cocaine-related harms. Alongside increased past-year use, there has also been a gradual increase in cocaine-related hospitalization rates and treatment episodes, against a backdrop of growing perceived availability (reflected by the percentage of users reporting that cocaine is easy to obtain) and an increasing number of seizures and arrests related to cocaine.[91]

During the first lockdown at the onset of the COVID-19 pandemic, there was a moderate and very short-lived decrease in cocaine consumption in Australia, according to wastewater analysis and self-reported data,[92] with "fewer opportunities to be with people or go out" being the most cited reason.[93] Wastewater analysis showed that levels of benzoylecgonine were lower in April 2020 than at any time in the previous 12 months, but they rebounded to record high levels in June 2020, most notably in the capital area.[94] In December 2020, observed levels of total consumption were generally at pre-pandemic levels or slightly higher.[95] However, levels of cocaine metabolite in wastewater again fell between February and June 2021, both nationwide and in many individual jurisdictions of Australia. The reasons behind this are yet to be thoroughly investigated, but a survey among users identified a significant increase in the price of cocaine in 2021, the first such increase in 15 years, while perceived cocaine purity decreased,[96] thus market factors could be responsible.

In New Zealand, overall cocaine consumption is relatively low and decreased during the pandemic, as suggested by wastewater analysis.[97] Levels of consumption dropped by 50 per cent between 2019 and 2020, mostly in months when lockdowns were in place.[98] The average national weekly consumption of cocaine was estimated at 0.5 kilograms in 2021.[99] In general, the level of cocaine use in New Zealand is low compared with global averages, however, recent household survey data are not available. Wastewater monitoring suggests that cocaine use is concentrated in highly populated urban areas at weekends.[100] Cocaine use rarely leads to drug-related treatment in New Zealand; the drug was not among the ten drugs whose use most often led to drug treatment in 2020 and there were only two cocaine-related deaths identified in the country in 2017, the latest year for which data were available.[101]

References

1 UNODC, coca bush cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2020 and previous years.

2 UNODC calculations based on coca bush cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2020 and previous years.

3 Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC)-Sistema Integrado de Monitoreo de Cultivos Ilícitos (SIMCI), Monitoreo de territorios afectados por cultivos ilícitos 2020 (Bogotá: UNODC-SIMCI, 2021).

4 UNODC, *Colombia: Monitoreo de territorios afectados por cultivos ilícitos 2015* (Bogota: United Nations publication, 2016).

5 Ibid.

6 Ibid.

7 Ibid.

8 Sistema de información de Lucha contra las Drogas (SISCOD) and Observatorio Peruano de Drogas, *Producción Estimada de Hoja de Coca En El Perú, 2020*, Reporte No. 03, 2021.

9 Ibid.

10 Lali Houghton, "Life in the VRAEM, Peru's 'Cocaine Valley,'" March 6, 2017.

11 Sistema de información de Lucha contra las Drogas (SISCOD) and Observatorio Peruano de Drogas, *Producción Estimada de Hoja de Coca En El Perú, 2020*.

12 Ibid.

13 Ibid.

14 UNODC and Estado Plurinacional de Bolivia, "Estado Plurinacional de Bolivia Monitoreo de Cultivos de Coca 2020," August 2021, https://www.unodc.org/documents/crop-monitoring/Bolivia/Bolivia_Informe_Monitoreo_Coca_2020.pdf.

15 Ibid.

16 Ibid.

17 Ibid.

18 Ibid.

19 Ibid.

20 UNODC calculations based on UNODC, coca bush cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2020 and previous year and UNODC, Responses to the Annual Report Questionnaire.

21 UNODC, responses to the annual report questionnaire, n.d.

22 República de Colombia Polía Nacional Centro International de Estudios Estratégicos contra el Narcotráfico - CIENA, "Impacto Financiero al Narcotráfico Policía Nacional Año 2019," March 2020.

23 Juan Diego Posada, "Pacific Drug Routes From South America More Popular Than Atlantic," *InSight Crime*, February 27, 2019.

24 United States Department of Justice, National Drug Intelligence Center, 2019 *National Drug Threat Assessment* (Washington D.C.: National Drug Intelligence Center, 2019).

25 United States Department of Justice, Drug Enforcement Administration, *2020 National Drug Threat Assessment* (Washington D.C.: National Drug Intelligence Center, 2021).

26 UNODC, Drugs Monitoring Platform., n.d.

27 UNODC, *World Drug Report 2021, Booklet 5, COVID-19 and Drugs: Impact and Outlook* (United Nations publication, 2021).

28 UNODC, Drugs Monitoring Platform.

29 UNODC, responses to the annual report questionnaire.

30 UNODC, Drugs Monitoring Platform.

31 Ibid.

32 Ibid.

33 Ibid.

34 Ibid.

35 Ibid.

36 Ibid.

37 EMCDDA, "European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland," December 15, 2021, https://www.emcdda.europa.eu/publications/data-fact-sheets/european-web-survey-drugs-2021-top-level-findings-eu-21-switzerland_en; A.R. Winstock et al., "Global Drug Survey (GDS) 2021. Key Findings Report.," 2021, https://www.globaldrugsurvey.com/wp-content/uploads/2021/12/Report2021_global.pdf.

38 EMCDDA, "European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland."

39 EMCDDA, *Impact of COVID-19 on Drug Markets, Use, Harms and Drug Services in the Community and Prisons: Results from an EMCDDA Trendspotter Study* (Luxembourg.: Publications Office of the European Union, 2021).

40 Marit Huizer et al., "Wastewater-Based Epidemiology for Illicit Drugs: A Critical Review on Global Data," *Water Research* 207 (December 2021): 117789, https://doi.org/10.1016/j.watres.2021.117789.

41 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants* (United Nations publication, 2021).

42 F Asicioglu et al., "Investigation of Temporal Illicit Drugs, Alcohol and Tobacco Trends in Istanbul City: Wastewater Analysis of 14 Treatment Plants," *Water Research* 190 (February 2021): 116729, https://doi.org/10.1016/j.watres.2020.116729; Anne Bannwarth et al., "The Use of Wastewater Analysis in Forensic Intelligence: Drug Consumption Comparison between Sydney and Different European Cities," *Forensic Sciences Research* 4, no. 2 (April 3, 2019): 141–51, https://doi.org/10.1080/20961790.2018.1500082; Nicholas Bishop et al., "Wastewater-Based Epidemiology Pilot Study to Examine Drug Use in the Western United States," *Science of The Total Environment* 745 (November 2020): 140697, https://doi.org/10.1016/j.scitotenv.2020.140697; Ana Causanilles et al., "Occurrence and Fate of Illicit Drugs and Pharmaceuticals in Wastewater from Two Wastewater Treatment Plants in Costa Rica," *Science of The Total Environment* 599–600 (December 2017): 98–107, https://doi.org/10.1016/j.scitotenv.2017.04.202; Zi-Xiang Cong et al., "Wastewater Analysis Reveals Urban, Suburban, and Rural Spatial Patterns of Illicit Drug Use in Dalian, China," *Environmental Science and Pollution Research* 28, no. 20 (May 2021): 25503–13, https://doi.org/10.1007/s11356-021-12371-5; Nebile Daglioglu, Evsen Yavuz Guzel, and Serdar Kilercioglu, "Assessment of Illicit Drugs in Wastewater and Estimation of Drugs of Abuse in Adana Province, Turkey," *Forensic Science International* 294 (January 2019): 132–39, https://doi.org/10.1016/j.forsciint.2018.11.012; Damien A. Devault et al., "Wastewater-Based Epidemiology in Low Human Development Index States: Bias in Consumption Monitoring of Illicit Drugs," *Environmental Science and Pollution Research* 25, no. 28 (October 2018): 27819–38, https://doi.org/10.1007/s11356-018-2864-7; Luca Fallati et al., "Use of Legal and Illegal Substances in Malé (Republic of Maldives) Assessed by Wastewater Analysis," Science of The Total Environment 698 (January 2020): 134207, https://doi.org/10.1016/j.scitotenv.2019.134207; Huizer et al., "Wastewater-Based Epidemiology for Illicit Drugs"; Si-Yu Liu et al., "Tracing Consumption Patterns of Stimulants, Opioids, and Ketamine in China by Wastewater-Based

Epidemiology," *Environmental Science and Pollution Research* 28, no. 13 (April 2021): 16754–66, https://doi.org/10.1007/s11356-020-12035-w; Selda Mercan et al., "Wastewater-Based Monitoring of Illicit Drug Consumption in Istanbul: Preliminary Results from Two Districts," *Science of The Total Environment* 656 (March 2019): 231–38, https://doi.org/10.1016/j.scitotenv.2018.11.345; Alexander B. Montgomery, Isaac Bowers, and Bikram Subedi, "Trends in Substance Use in Two United States Communities during Early COVID-19 Lockdowns Based on Wastewater Analysis," *Environmental Science & Technology Letters* 8, no. 10 (October 12, 2021): 890–96, https://doi.org/10.1021/acs.estlett.1c00426; Jack Rice et al., "Wastewater-Based Epidemiology Combined with Local Prescription Analysis as a Tool for Temporal monitoring of Drugs Trends - A UK Perspective," *Science of The Total Environment* 735 (September 2020): 139433, https://doi.org/10.1016/j.scitotenv.2020.139433.

43 UNODC, responses to the annual report questionnaire.

44 Observatorio Nacional de Drogas, Servicio Nacional para la Prevención y Rehabilitación del Consumo de, and Drogas y Alcohol (SENDA), "Segunda Encuesta Online Efectos Del COVID-19 En El Uso de Alcohol y Otras Drogas En Chile 2021.," https://www.senda.gob.cl/wp-content/uploads/2021/06/Segunda-Encuesta-SENDA.pdf.

45 Mario A. Rivera et al., "Antiquity of Coca-Leaf Chewing in the South Central Andes: A 3,000 Year Archaeological Record of Coca-Leaf Chewing from Northern Chile," *Journal of Psychoactive Drugs* 37, no. 4 (December 2005): 455–58, https://doi.org/10.1080/02791072.2005.10399820.

46 EMCDDA and Europol, *EU Drug Market: Cocaine* (Luxembourg: Publications Office of the European Union, 2022), https://www.emcdda.europa.eu/publications/eu-drug-markets/cocaine_en.

47 Inter-American Drug Abuse Control Commission (CICAD), Organization and of American States (OAS), *Report on Drug Use in the Americas 2019* (Washington, DC: Organization of American States, 2019).

48 EMCDDA and Europol, *EU Drug Market: Cocaine.*

49 UNODC, *World Drug Report 2021*, Booklet 4, *Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

50 Carla F. Olivari et al., "Polydrug Use and Co-Occurring Substance Use Disorders in a Respondent Driven Sampling of Cocaine Base Paste Users in Santiago, Chile," *Journal of Psychoactive Drugs*, November 2, 2021, 1–10, https://doi.org/10.1080/02791072.2021.1976886.

51 Ibid.

52 UNODC, responses to the annual report questionnaire.

53 Francisco Inácio Bastos and Neilane Bertoni, *Pesquisa Nacional Sobre o Use de Crack. Quem São Os Usuários de Crack e/Ou Similares Do Brasil? Quantos São Nas Capitais Brasileiras?* (ICICT/FIOCRUZ, 2014).

54 Luciane Ogata Perrenoud et al., "Factors Associated with Crack-Cocaine Early Initiation: A Brazilian Multicenter Study," *BMC Public Health* 21, no. 1 (December 2021): 781, https://doi.org/10.1186/s12889-021-10769-x.

55 Age-standardized prevalence rate, age-standardized mortality rate, years of life lost due to premature death, years lived with disabilities, and disability adjusted life years, all due to cocaine use.

56 Rayce dos Santos Crepalde et al., "The Burden of Mental Disorders Attributable by Cocaine Use: Global Burden of Diseases Study in Brazil, 1990 and 2019," *Revista Da Sociedade Brasileira de Medicina Tropical* 55, no. suppl 1 (2022): e0320-2021, https://doi.org/10.1590/0037-8682-0320-2021.

57 UNODC, responses to the annual report questionnaire.

58 Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health* (Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, 2021).

59 Health Canada, "Canadian Alcohol and Drugs Survey (CADS): Summary of Results for 2019," surveys, December 20, 2021, https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2019-summary.html.

60 Desiree Mustaquim, Christopher M. Jones, and Wilson M. Compton, "Trends and Correlates of Cocaine Use among Adults in the United States, 2006–2019," *Addictive Behaviors* 120 (September 2021): 106950, https://doi.org/10.1016/j.addbeh.2021.106950.

61 Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health.*

62 National Institute on Drug Abuse, "Percentage of Adolescents Reporting Drug Use Decreased Significantly in 2021 as the COVID-19 Pandemic Endured," December 15, 2021.

63 United States, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS) 2019. *Admissions to and Discharges From Publicly Funded Substance Use Treatment* (Rockville, MD: Substance Abuse and Mental Health Services Administration, 2021).

64 S. Konefal et al., *National Treatment Indicators Report*. 2016–2018 Data (Ottawa: Canadian Centre on Substance Use and Addiction, 2021).

65 ODC, responses to the annual report questionnaire.

66 Leah LaRue et al., "Rate of Fentanyl Positivity Among Urine Drug Test Results Positive for Cocaine or Methamphetamine," *JAMA Network Open* 2, no. 4 (April 26, 2019): e192851, https://doi.org/10.1001/jamanetworkopen.2019.2851; Daniel Ciccarone, "The Rise of Illicit Fentanyls, Stimulants and the Fourth Wave of the Opioid Overdose Crisis," *Current Opinion in Psychiatry* 34, no. 4 (July 2021): 344–50, https://doi.org/10.1097/YCO.0000000000000717.

67 Public Health Agency of Canada, *Apparent Opioid and Stimulant Toxicity Deaths. Surveillance of Opioid- and Stimulant-Related Harms in Canada.* (Ottawa, 2021), https://health-infobase.canada.ca/src/doc/SRHD/UpdateDeathsDec2021.pdf.

68 EMCDDA, *European Drug Report 2021: Trends and Developments* (Luxembourg: Publications Office of the European Union, 2021).

69 UNODC, responses to the annual report questionnaire.

70 EMCDDA, *European Drug Report 2021: Trends and Developments*.

71 EMCDDA and Europol, *EU Drug Market: Cocaine.*

72 EMCDDA, "Infographic: Clients Entering Treatment for Cocaine in Europe," October 2021, https://www.emcdda.europa.eu/media-library/infographic-clients-entering-treatment-cocaine-europe_en.

73 UNODC, responses to the annual report questionnaire.

74 MCDDA, *Recent Changes in Europe's Cocaine Market: Results from an EMCDDA Trendspotter Study*, Rapid Communication (Luxembourg: Publications Office of the European Union, 2018).

75 EMCDDA, *European Drug Report 2021: Trends and Developments*.

76 Public Health England, Public Health Scotland, Public Health Wales and Public Health Agency Northern Ireland, "Shooting Up: Infections among People Who Inject Drugs in the UK, 2019," December 2020.

77 EMCDDA and Europol, *EU Drug Market: Cocaine.*

78 EMCDDA, "European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland."

79 Ibid.

80 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*, Drug Statistics Series No. 32, PHE 270 (Canberra: AIHW, 2020).

81 James Shearer, National Drug and Alcohol Research Centre (Australia) National Drug Law Enforcement Research Fund (Australia) National Drug Strategy (Australia), Australia, and Department of Health and Ageing, *Characteristics and Dynamics of Cocaine Supply and Demand in Sydney and Melbourne* (Sydney: National Drug Law Enforcement Research Fund, 2005); UNODC, *World Drug Report 2021, Booklet 2, Global Overview: Drug Demand, Drug Supply.* (United Nations publication, 2021).

82 Sutherland, R et al., *Australian Drug Trends 2021: Key Findings from the National Ecstasy and Related Drug Reporting System (EDRS) Interviews* (NDARC, Sydney, 2021), https://doi.org/10.26190/T6SH-G213.

83 SCORE, *Wastewater Monitoring Data 2011-2020 Sewage Analysis CORe Group Europe*, 2020.

84 Australian Criminal Intelligence Commission, *National Wastewater Drug Monitoring Program—Report 14* (Commonwealth of Australia, 2021).

85 Nicola Man et al., "Trends in Cocaine Use, Markets and Harms in Australia, 2003–2019," *Drug and Alcohol Review* 40, no. 6 (September 2021): 946–56, https://doi.org/10.1111/dar.13252.

86 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*.

87 Ibid.

88 Sutherland, R et al., *Australian Drug Trends 2021*.

89 Australian Criminal Intelligence Commission, *National Wastewater Drug Monitoring Program—Report 14*, 14.

90 Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services in Australia Annual Report*, Cat. No. HSE 250 (Canberra: AIHW, 2021).

91 Man et al., "Trends in Cocaine Use, Markets and Harms in Australia, 2003–2019."

92 Amy Peacock et al., *Australian Drug Trends 2020: Key Findings from the National Ecstasy and Related Drugs Reporting System (EDRS) Interviews* (Sydney: National Drug and Alcohol Research Centre, UNSW Sydney., n.d.).

93 Ibid.

94 Australian Criminal Intelligence Commission, *National Wastewater Drug Monitoring Program—Report 14*.

95 Australian Institute of Health and Welfare, "Alcohol, Tobacco & Other Drugs in Australia: Impacts of COVID-19 on Alcohol and Other Drug Use," December 15, 2021, https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/impact-of-covid-19-on-alcohol-and-other-drug-use.

96 Sutherland, R et al., *Australian Drug Trends 2021*.

97 SCORE, *Wastewater Monitoring Data 2011-2020 Sewage Analysis CORe Group Europe*.

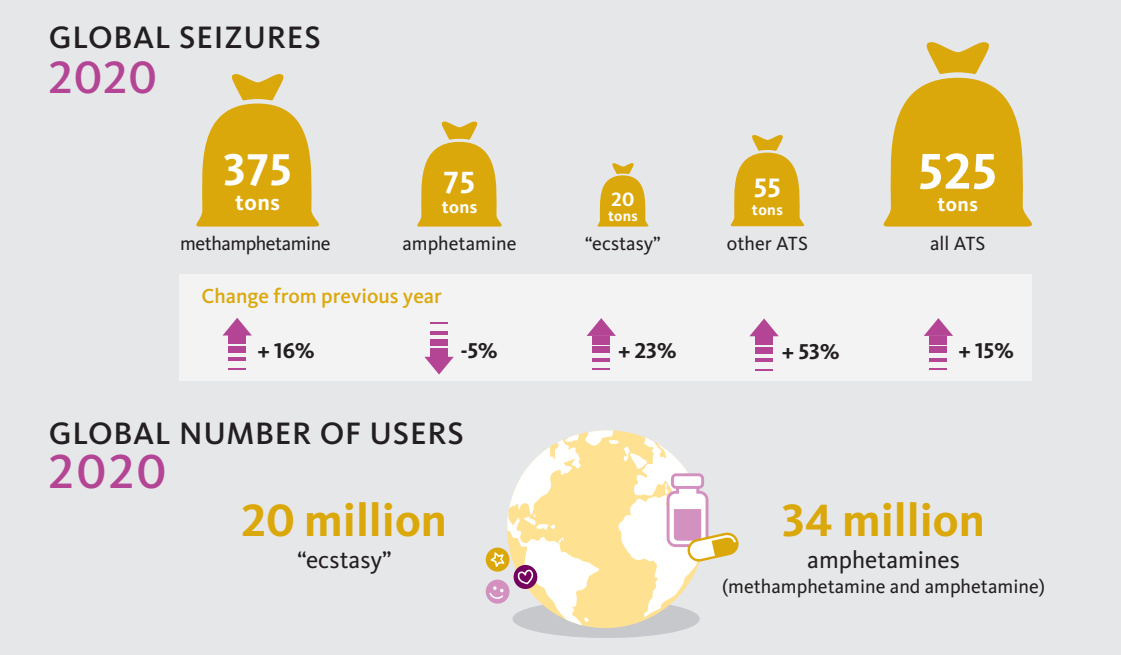
98 New Zealand Police, *Wastewater Drug Testing in New Zealand: National Overview. Quarter One 2021*, 2021.

99 Ibid.

100 UNODC, responses to the annual report questionnaire.

101 Ibid.

AMPHETAMINE-TYPE STIMULANTS



Note: Data refer to 2020.

Amphetamine-type stimulants are a group of drugs which comprise drugs with a central nervous system stimulant effect. The group includes amphetamine and methamphetamine (together called 'amphetamines'), certain pharmaceutical products if used for non-medical purposes (such as phentermine, methylphenidate, dexamphetamine or dextro-amphetamine) and other stimulants (including cathinone, ephedrine, pseudoephedrine), and also "ecstasy"-type substances such as MDMA and similar substances (for example, MDA).

The substances with the highest prevalence of use are amphetamines and "ecstasy" (MDMA) and therefore the present chapter focuses mostly on them.

Global supply of amphetamine-type stimulants

Quantities seized reached a record high in 2020

A record quantity of over 525 tons of ATS was seized in 2020, which represents a 15 per cent increase year on year[1] and continued the upward trend observed over the period 2010–2020. The quantities of methamphetamine seized grew fivefold over that 10-year period, the quantities of amphetamine seized almost quadrupled and the quantities of "ecstasy" seized more than tripled.

Methamphetamine continued to dominate seizures and manufacture of amphetamine-type stimulants at the global level

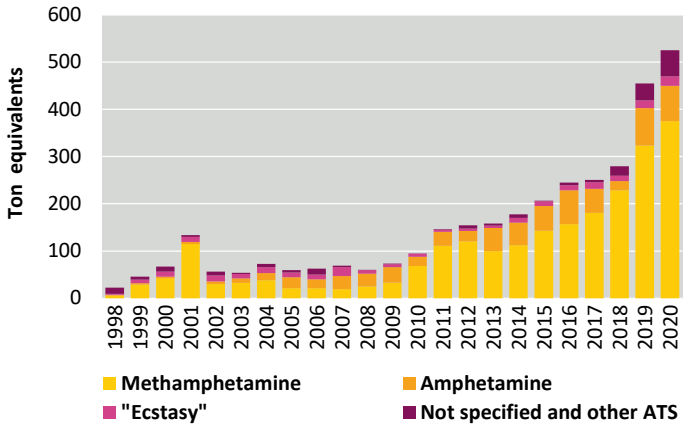
Data on seizures of ATS suggest that, at the global level, global trafficking in ATS continues to be dominated by methamphetamine. Seventy-two per cent of ATS seized over the period 2016–2020 was related to methamphetamine, followed by amphetamine (17 per cent) and "ecstasy" (4 per cent), with the remainder being other ATS.[a]

The number of countries reporting seizures of methamphetamine rose from 84 in the period 2006–2010 to 117 in the period 2016–2020, suggesting a significant increase in the geographical spread of methamphetamine trafficking. The number of countries reporting seizures of amphetamine and "ecstasy" remained fairly stable between those two periods (91 and 105 countries, and 95 and 103 countries, respectively). Although the total number of countries reporting seizures of ATS has risen, the quantities seized remain somewhat concentrated in certain countries. Three countries accounted for 65 per cent of the global total of methamphetamine seized in the period 2016–2020, three accounted for 54 per cent of "ecstasy" seized, and three accounted for 43 per cent of amphetamine and "captagon" seized.

During the period 2016–2020, nearly 16,000 sites and facilities associated with ATS manufacture were dismantled across 45 countries worldwide. Some 94 per cent of them were linked to methamphetamine. The majority (69 per cent) of the dismantled sites were involved in the actual manufacture of methamphetamine; the others were waste-dumping sites (19 per cent) or warehouses used to store chemicals (11 per cent). Facilities involved exclusively in the packaging of methamphetamine accounted for less than 1 per cent the total, suggesting that most packaging is still done at manufacturing sites.

a The category "other ATS" includes a number of pharmaceutical stimulants, such as methylphenidate, dexamphetamine, phenmetrazine, and Adderall (a trade name for a combination of racemic amphetamine and dextroamphetamine), synthetic cathinones under international control (e.g. methcathinone, mephedrone, methylone or 3,4-methylenedioxypyrovalerone (MDPV), originally often marketed as "bath salts") and non-specified ATS.

FIG. 26 Global quantity of amphetamine-type stimulants seized, 1998–2020



Source: UNODC, responses to the annual report questionnaire.

The manufacture of all major ATS is affected by trends relating to their various precursors and pre-precursors. Once any such chemical substance not under international control is scheduled, chemists at manufacturing sites explore the use of alternatives. As a result, many manufacturing sites produce not only ATS end products but also the precursors required in the manufacturing process.[2] That tends to give a competitive edge to organized crime groups that have, *in loco* or can afford to hire from abroad, highly qualified chemists.

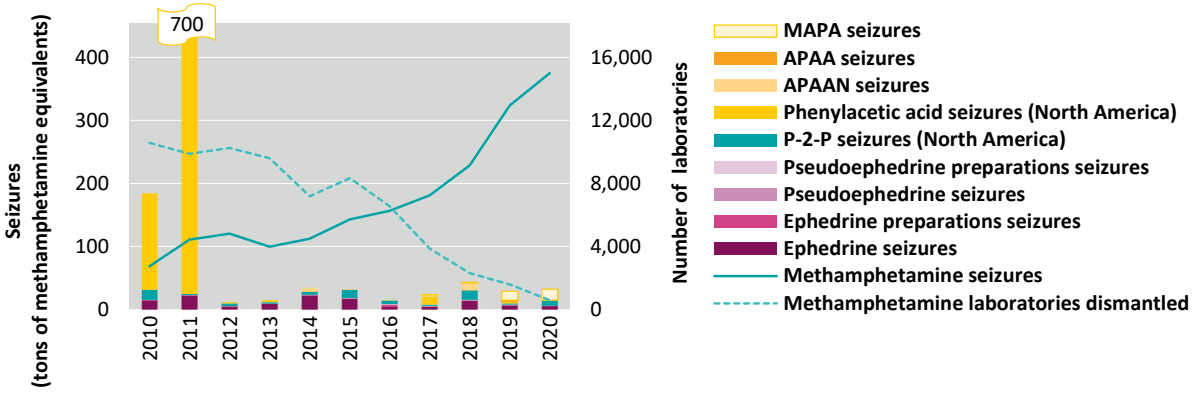
Global supply of methamphetamine and amphetamine

Clear upward trend in the interception of methamphetamine

Methamphetamine seizures and qualitative assessments of trafficking reported by Member States have shown a clear upward trend over the past two decades. That trend continued in 2020, as 55 per cent of the 65 countries reporting qualitative methamphetamine trafficking trends to UNODC reported increases and 14 per cent reported stable levels.

Meanwhile, the absolute number of methamphetamine laboratories dismantled has declined markedly over

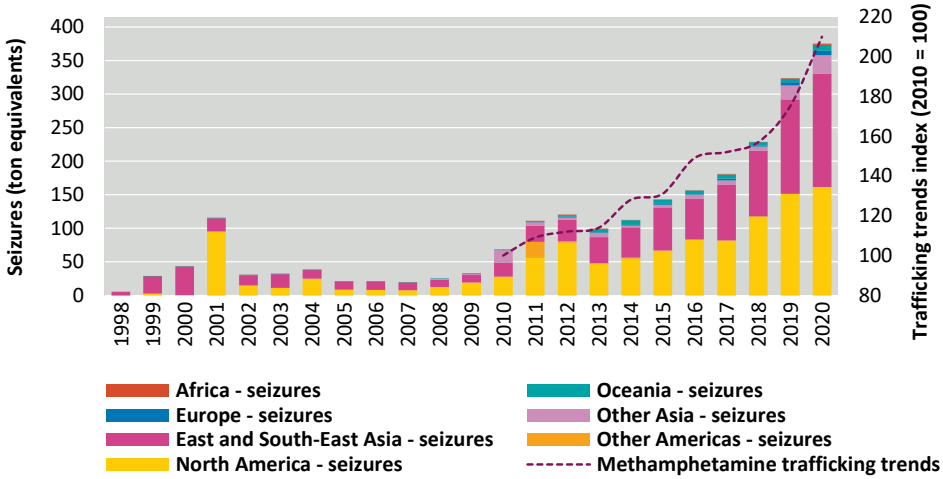
FIG. 27 Seizures of methamphetamine and internationally controlled precursors used in the manufacture of methamphetamine and number of dismantled methamphetamine laboratories, 2010–2020



Sources: UNODC calculations based on INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances* (New York: United Nations Publications, 2022) and on responses to the annual report questionnaire.

Notes: Only internationally controlled precursor chemicals used in the manufacture of methamphetamine are listed here; P-2-P and its precursor phenylacetic acid are shown only for North America, as P-2-P and its precursors are still mainly used in the manufacture of amphetamine in other parts of the world. APAA and APAAN, precursors for P-2-P, are used in the production of both amphetamine and methamphetamine. For the conversion of precursor chemicals into methamphetamine equivalents, the midpoints of the ratios reported by INCB were applied (1.5:1 for ephedrine, pseudoephedrine and phenylacetic acid, 1.25:1 for P-2-P and 1.9:1 for APAAN and APAA); for the conversion of ephedrine preparations into ephedrine or of pseudoephedrine preparations into pseudoephedrine (prior to the conversion into methamphetamine equivalents), a ratio of 5:1 was used, suggesting that a tablet containing 30 mg of ephedrine may weigh some 150 mg or a tablet containing 50 mg of ephedrine may weigh some 250 mg in total. In addition, the high volume of seizures of phenylacetic acid shown for 2010 and 2011 was due to a specific operational focus targeting esters of phenylacetic acid in North America, where such esters are controlled (although they are not subject to international control). Without those seizures of phenylacetic acid and its esters in North America, the quantities of methamphetamine precursors seized would exhibit an overall upward trend over the past decade.

FIG. 28 Quantities of methamphetamine seized, by region and subregion, and reported qualitative trends in methamphetamine trafficking, 1998–2020



Source: UNODC, responses to the annual report questionnaire.

Note: The trafficking trends index is based on qualitative information on trends in methamphetamine trafficking reported by Member States. The trend line is calculated on the basis of the number of countries reporting increases minus the number of countries reporting decreases (2 points for "large increase", 1 point for "some increase", 0 points for "stable", -1 point for "some decrease", -2 points for "large decrease").

the past decade (by 94 per cent), suggesting that, while fewer sites are being dismantled, those that are active nowadays represent substantially larger operations.[b] Data also suggest that fewer laboratories have been detected and dismantled owing to a shift of methamphetamine manufacture to areas with higher levels of instability.[3, 4]

Ongoing shifts in the chemicals used in the manufacture of methamphetamine: increasing use of precursors of P-2-P

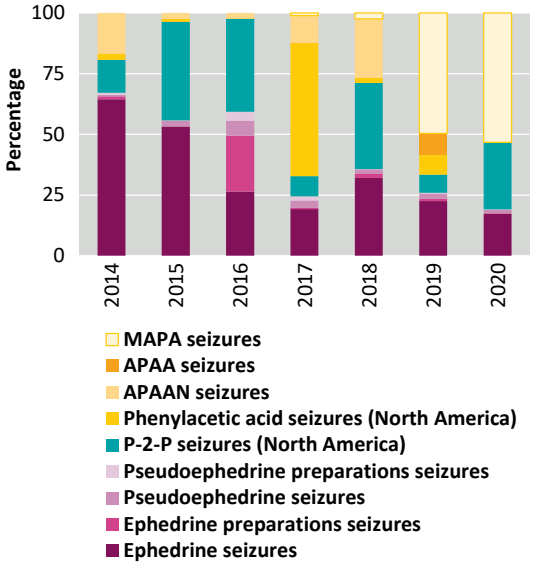
Methamphetamine can be manufactured using different precursors and the most common ones vary by region. In Asia, Oceania, Africa and most parts of Europe, the manufacture of the substance has traditionally been based primarily on ephedrine and pseudoephedrine, while in North America it has been based primarily on the use of various chemicals required to manufacture of P-2-P and then methamphetamine, also known as BMK.

In most cases, P-2-P itself is nowadays illicitly manufactured using various precursor chemicals,[5] and seizures suggest that many laboratories have increasingly been switching to P-2-P for the manufacture of methamphetamine (and not only for amphetamine, as was previously the case). In Western Europe, several "designer precursors" for P-2-P have been found in recently dismantled industrial-scale laboratories[6, 7] and the apparent relative ease of sourcing them, frequently from China according to EMCDDA,[8] may have influenced the expansion of clandestine manufacture in the subregion in recent years.[9]

Seizures of P-2-P have not been confined to any one continent. The largest quantities seized in 2020 were reported by Mexico, which also seized the largest quantities of phenylacetic acid, used in the manufacture of P-2-P, followed by the Netherlands, which also seized the most APAA, another precursor for P-2-P and by China, mostly from clandestine laboratories and warehouses. The largest quantities of MAPA, another P-2-P precursor, were seized in Belgium.

b Whereas methamphetamine laboratories dismantled in the period 2016–2020 continued to be primarily small-scale facilities (47 per cent), in 2020 the share of small-scale laboratories among all dismantled laboratories fell to 34 per cent and that of medium-sized laboratories increased to 16 per cent. The proportions of kitchen laboratories and industrial-sized laboratories did not change significantly (UNODC, responses to the annual report questionnaire).

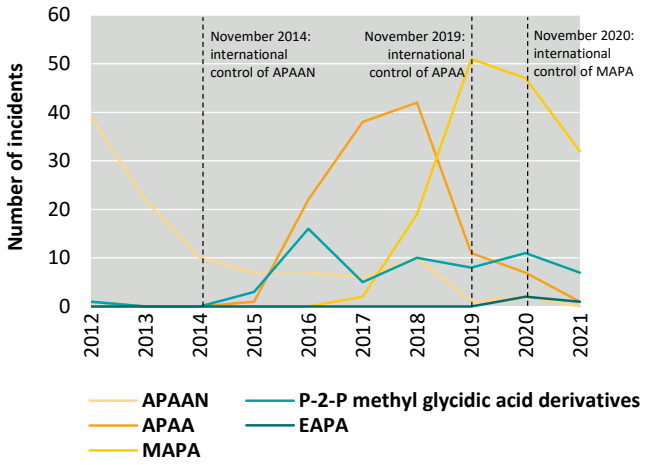
FIG. 29 Distribution of seizures of internationally controlled precursors used in the manufacture of methamphetamine, expressed in kilograms of methamphetamine equivalents, 2014–2020



Sources: UNODC calculations based on INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances* (New York: United Nations Publications, 2022).

In Oceania, seizure data suggest that the clandestine manufacture of methamphetamine continued to be primarily based on ephedrine, followed by pseudoephedrine,[10] in the period 2016–2019.[11] The data on seizures in 2020, however, suggest that in the manufacture of methamphetamine the use of pseudoephedrine preparations, mainly originating in India according to the Australian government, have now overtaken ephedrine preparations (which, according to the Australian authorities, mainly originated in China).[12] The use of P-2-P precursors in Oceania appears to be gaining ground. The proportion of detections of methamphetamine laboratories related to P-2-P precursors in Australia tripled, rising from 3 per cent in the fiscal year 2010/11 to 9 per cent in 2019/20.[13]

FIG. 30 **Popularity of designer precursors: incidents involving selected designer precursors of P-2-P communicated through the Precursors Incident Communication System, 2012–2021**



Source: INCB, 2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances (New York: United Nations publications, 2022)

Note: data for 2021 only cover the first 10 months of the year.

Seizures of methamphetamine smuggled into Australia indicate a notable rise in methamphetamine manufactured from P-2-P, with its share rising from 14 per cent in 2011 to 70 per cent over the first two quarters of 2020.[14] This may indicate an increase in the importance of imports from North America where the use of P-2-P in the manufacture of methamphetamine is very common. Such imports seem to have partly replaced methamphetamine imports from East and South-East Asia which used to dominate overall methamphetamine shipments to Oceania in the past.[15]

Methamphetamine producers continued to seek non-controlled chemicals for use as precursors

In 2020, methamphetamine was again seized in larger quantities than those of its precursors, possibly suggesting a stronger focus by law enforcement on seizing the end product. However, this also points to the growing importance of non-controlled chemicals as pre-precursors.[16, 17]

Seizures of several non-scheduled "designer precursors" were reported worldwide in 2020, notably of P-2-P methyl glycidic acid derivatives, primarily from Belgium and the Netherlands, and of EAPA (the ethyl ester analogue of MAPA), primarily from Germany and the Netherlands.[18] A decline in incidents reported to the INCB Precursors Incident Communication System regarding some of those "designer precursors" once they had been placed under international control suggests that the diversification of precursors used to manufacture amphetamines may be at least partially driven by their scheduling at the national, regional and the international level.[19]

Several chemicals with legitimate uses and not subject to international control are also used in the manufacture of P-2-P and, ultimately, methamphetamine. The high quantities seized of those substances, for example benzyl chloride and benzyl cyanide in Jordan, Mexico and the Netherlands,[20] are also potential indicators of their use in methamphetamine manufacture. Increased quantities of several other non-controlled precursor chemicals used in the manufacture of ephedrine and pseudoephedrine have been seized in East and South-East Asia. They include, in order of quantities seized in China in 2020, propiophenone, 2-bromopropriophenone and bromine, an intermediate, manufactured out of propiophenone or 2-bromopropiophenone.[21]

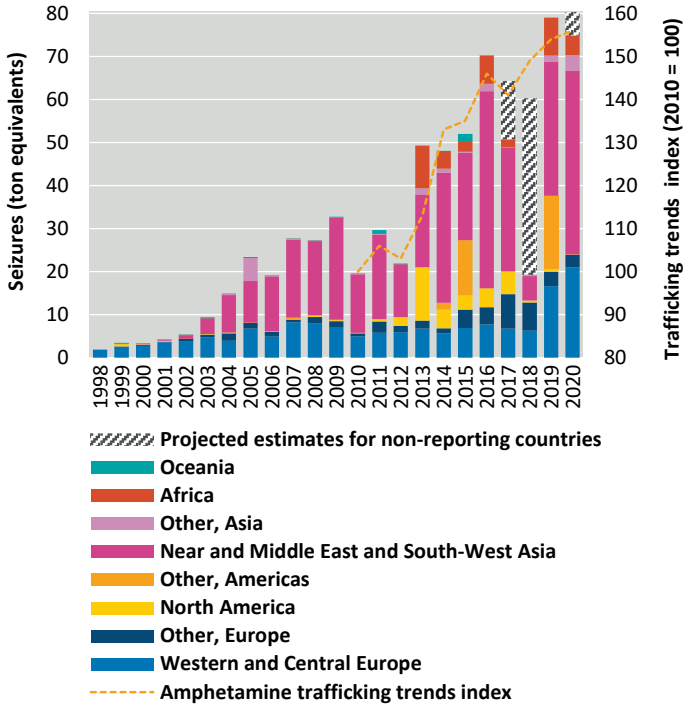
Another important starting material for methamphetamine manufacture that is not under international control is the *Ephedra* plant from which ephedrine is extracted. The plant grows wild, notably in Afghanistan[22].

Amphetamine seizures and trafficking trends point to temporary stabilization in 2020

Seizure data and qualitative trends on amphetamine trafficking reported by Member States suggest that the substantial upward trend in amphetamine trafficking observed between 2010 and 2019 may have reached a plateau, albeit at a high level, in 2020.

While the quantities of amphetamine seized continued to rise in the two main consumer markets, namely, the Near and Middle East and Western and Central Europe, those increases were offset by the far lower quantities

FIG. 31 Quantities of amphetamine seized and reported qualitative trends in amphetamine trafficking, 1998–2020



Source: UNODC, responses to the annual report questionnaire.

Note: The trafficking trends index is based on qualitative information on trends in amphetamine trafficking reported by Member States. The trend line is calculated on the basis of the number of countries reporting increases minus the number of countries reporting decreases (2 points for "large increase", 1 point for "some increase", 0 points for "stable", -1 point for "some decrease", -2 points for "large decrease").

of amphetamine reported to have been seized in the Americas.[23] That "decline" may be linked to incomplete reporting in 2020 and is not confirmed by demand data. Household data from the United States show that the prevalence rate of those who had misused amphetamine in the past year (1.6 per cent) remained stable from 2019 to 2020, as did the daily or near-daily non-medical use of pharmaceutical stimulants,[24] which, to a large extent, reflects amphetamine use.[c] Those data suggest that there were most probably no shortages in the supply of amphetamine to North America in 2020.

The Netherlands, followed by Belgium and Poland, reported dismantling the largest number of amphetamine laboratories in the period 2016–2020. Laboratories were also dismantled in the Americas, Asia and Oceania.

Those three European countries were also most often reported as points of origin or departure of amphetamine seized in the 2016–2020 period;[d] the United States was reported most frequently in the Americas, and Lebanon and the Syrian Arab Republic, both primarily associated with shipments of "captagon", were most often cited in the Near and Middle East.

Global use of amphetamine-type stimulants

Use of amphetamines continued to rise but signs of decrease in demand for treatment in 2020

Primarily on the basis of self-reported responses to general population surveys, a total of 34 million people aged 15–64, or 0.7 per cent of the global population, are estimated to have used amphetamines in the past year, and 20 million (0.4 per cent) are estimated to have used "ecstasy"-type substances. Some of those users had used both types of substances. The two most commonly used amphetamines are amphetamine and methamphetamine.

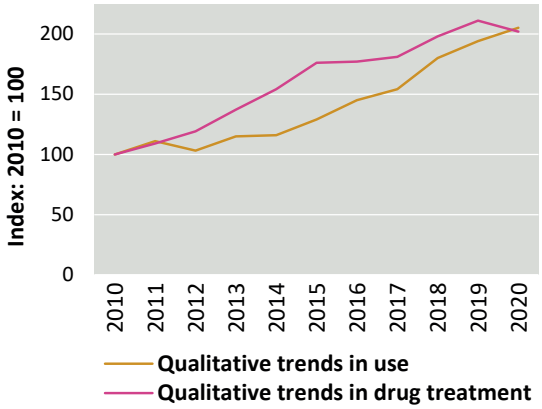
The global estimate of amphetamines use was similar in 2010, with 33 million past year users or 0.7% of the population aged 15-64. However, these estimates have to be interpreted with caution owing to the lack of data from major consumer countries in Asia where other market indicators, such as seizures and prices, suggest an expansion over the last decade.

Qualitative information based on perceptions of trends reported by national experts to UNODC shows a

c The number of persons who misused amphetamine accounted for 87 per cent of all persons who misused prescription stimulants in 2020 (*Results from the 2020 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland: Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality, 2021)).

d Data on the countries of origin are only available until 2019, as the question is not included in the new annual report questionnaire. Data on countries of departure are available over the period 2016–2020.

FIG. 32 **Trends in the use of amphetamine-type stimulants, based on qualitative reporting, 2010–2020**



Source: UNODC, responses to the annual report questionnaire.

Note: The index of trends in the use of ATS is based on qualitative information on trends in the use of amphetamine-type stimulants reported by Member States (on average, 40 countries per year for ATS-related treatment trends and 47 for ATS use over the period 2010–2020). The trend line is calculated on the basis of the number of countries reporting increases minus the number of countries reporting decreases (2 points for "large increase", 1 point for "some increase", 0 points for "stable", -1 point for "some decrease", -2 points for "large decrease"). In 2020, the data collection instrument was updated and contained "ecstasy"-type substances as a separate drug class, not including them in the category of amphetamine-type stimulants, which continues to include amphetamines and certain cathinones under international control (mephedrone, methylone, methcathinone and cathinone).

continued increase both in terms of the use of amphetamines and the number of people in treatment for amphetamines over the past decade.[25] However, data for 2020 show that this increasing trend has paused and that the number of people in treatment for amphetamines may have decreased, consistent with an overall decrease in treatment as a result of the COVID-19 pandemic.[e] Trends derived from such qualitative information are consistent with the available supply indicators, such as prices and seizures, which indicate continued global expansion of the market for amphetamines. Qualitative information of this type suffers from methodological limitations, but it has an advantage in that it takes into consideration small-scale studies and expert observations regarding countries where drug use surveys are not regularly implemented.

e See also the chapter entitled "*Responses to drug use*" in booklet 2 of the present report.

Qualitative information on trends in the use of "ecstasy" was reported under different categories by countries before the implementation by UNODC of its new data collection tool (the updated annual report questionnaire, which came into use in 2020), thus qualitative reports of trends in "ecstasy" use are limited to the period 2019–2020. These reports suggest a moderate increase globally. At the same time, studies from countries where "ecstasy" is used in recreational settings suggest that the use of "ecstasy" declined more than any other drug during the pandemic in those countries.[f]

Wastewater analysis, while limited in geographical coverage to Europe, North America and some parts of Asia and Oceania,[26] also suggests that the use of "ecstasy" declined between 2019 and 2020 more than the use of amphetamines. In the majority of analysed locations, decreased levels of consumption of MDMA were identified, while in a slight majority of those locations, increased amphetamine use and decreased methamphetamine use were detected. Early wastewater analysis data from 2021 suggest an overall increase in amphetamine consumption in the majority of locations monitored by the Sewage Analysis CORe group, most of which are in Europe, between 2020 and 2021; an increase and a decrease in methamphetamine consumption in about the same number of locations; and a continuous decrease in MDMA consumption in a large majority of locations.

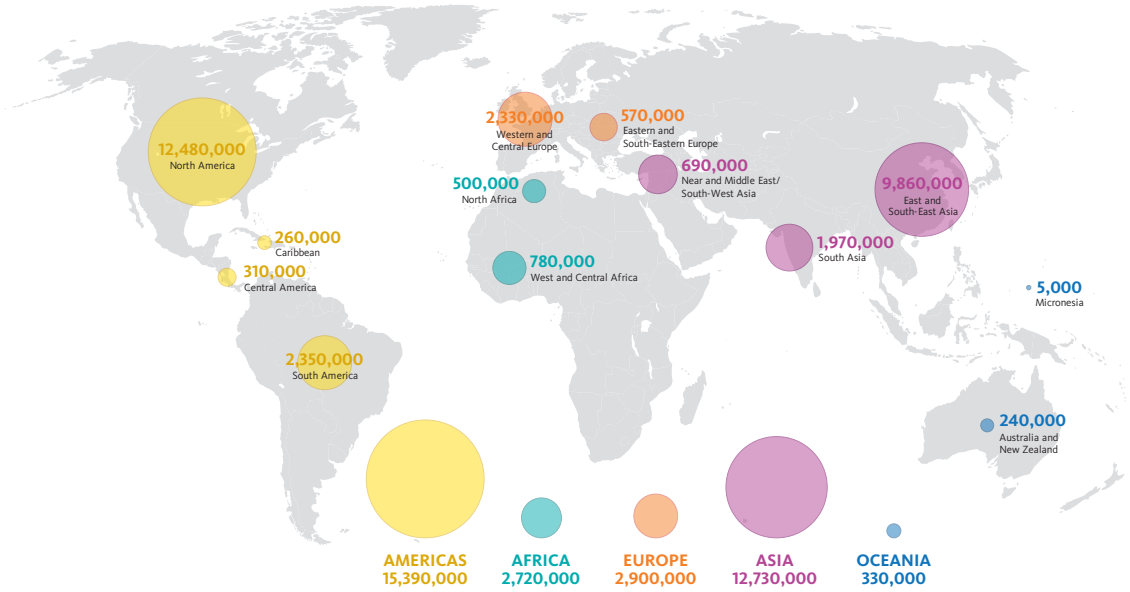
Regional patterns in amphetamines supply and use

In the period 2016–2020, the largest numbers of seizures of ATS were reported by East and South-East Asia and North America, followed by the Near and Middle East/South-West Asia and Europe. Most ATS seizures were accounted for by methamphetamine, followed by amphetamine and "ecstasy". Other ATS seized included synthetic cathinones, notably seized in Eastern Europe and diverted pharmaceutical stimulants, often seized in Africa.

The past-year prevalence of use of amphetamines among persons aged 15–64 is highest in North

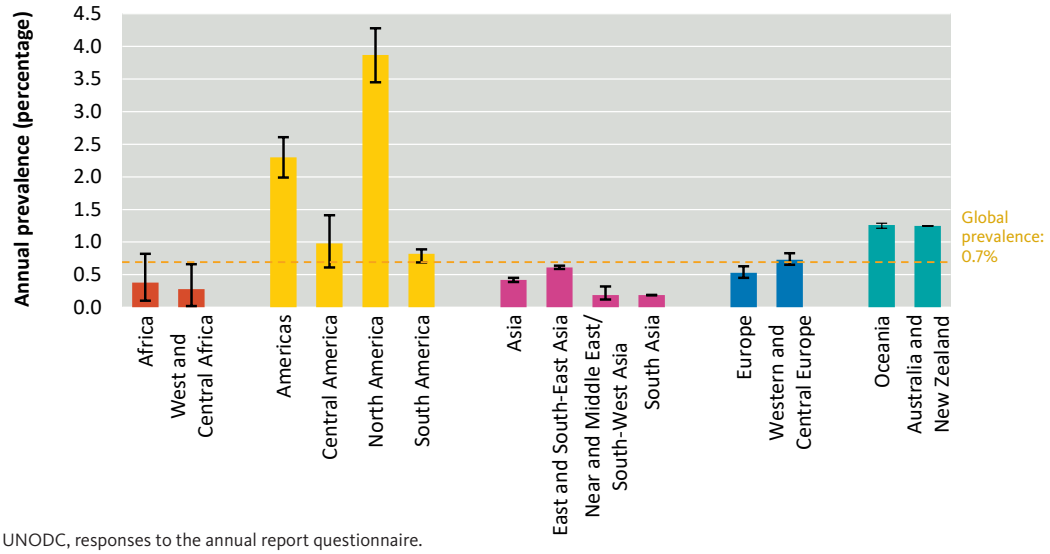
f See also booklet 2, "*Global Overview of Drug Demand and Drug Supply*", of the present report.

MAP 7 Number of users of amphetamines, by region and subregion, 2020



Source: UNODC, responses to the annual report questionnaire.

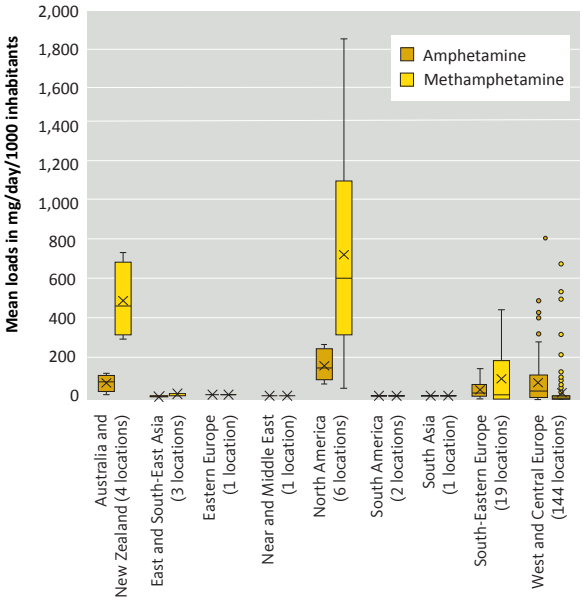
FIG. 33 Use of amphetamines, by region and subregion, 2020



Source: UNODC, responses to the annual report questionnaire.

Note: Data are not shown for subregions where recent estimates (from the past 10 years) were not available from countries and thus subregional estimates could not be computed. Amphetamines include amphetamine, methamphetamine and pharmaceutical stimulants used non-medically. For 2020, estimates of the global number of users and prevalence of use of amphetamines are based on estimates from 82 countries, together accounting for 74 per cent of the world population. Of those, new data points were reported from fourteen countries in 2020.

FIG. 34 **Mean loads of amphetamine and methamphetamine per 1,000 inhabitants in selected cities with available data, by subregion, 2015–2021**



Source: UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe and on scientific literature. (See methodological annex.)

Note: Average quantity of amphetamine and methamphetamine found in wastewater in 181 locations. Comparability between SCORE group estimates and published estimates may not be complete. Population-normalised loads are the amounts of the target drug residue (in this case amphetamine and methamphetamine) entering the wastewater treatment plant, divided by the population served by the wastewater treatment plant, which shows the amount of a substance consumed per day per 1 000 inhabitants.
Small circles represent outliers (locations with higher mean loads than 1.5 times the interquartile range of values for a given subregion. Statistical outliers may be related to the dumping of waste from local manufacture.

America, where 3.9 per cent of the population are estimated to have used amphetamines (corresponding to 12.5 million persons), followed by Australia and New Zealand (1.3 per cent). The second highest estimated number of users reside in East and South-East Asia (almost 10 million users), owing to the relatively larger population of this subregion. Generally low levels of use of amphetamines continue to be reported from Africa and other parts of Asia, although there are some countries in those regions with higher levels of ATS use.[27]

Wastewater analysis data can offer additional insights into the distribution of amphetamine and methamphetamine consumption. However, interpreting the levels of amphetamine in wastewater without viewing them in the context of methamphetamine levels can lead to an overestimation of its consumption, because a large portion of methamphetamine is metabolized in such a way that it is transformed into amphetamine soon after entering the body.[28] Moreover, part of what is found in wastewaters may originate from illicit manufacture or fly-tipping rather than consumption.[29, 30, 31]

The level of consumption identified in wastewater analysis for South-Eastern Europe suggests that the prevalence of methamphetamine use in the subregion may be higher than what has been estimated on the basis of household surveys.

Methamphetamine: regional overview

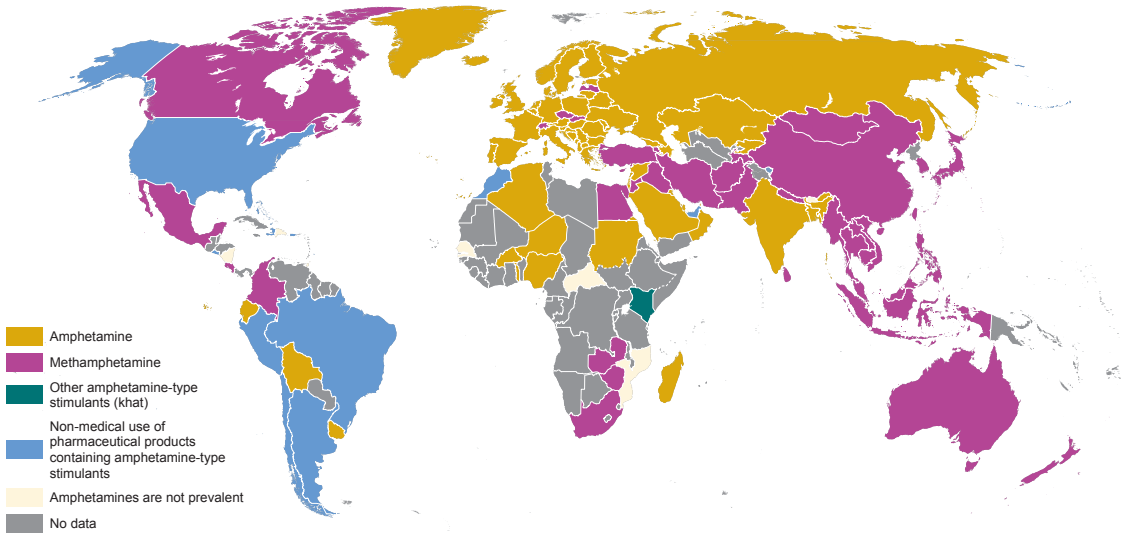
Most trafficking in methamphetamine continues to be intraregional

Most trafficking in methamphetamine continued to be intraregional, notably within East and South-East Asia and within North America, which are also home to the main departure or transit countries of methamphetamine. In addition, some interregional trafficking has also been reported.

The major destination markets of methamphetamine shipments have not changed substantially in recent years, although the importance of China for methamphetamine shipments has clearly declined following a crackdown on manufacture and trafficking in that country. In the period 2018–2020, China, including Hong Kong Special Administrative Region, Macao Special Administrative Region and Taiwan Province of China, was mentioned by Member States nine times as a departure or transit country for methamphetamine, down from 46 times in the period 2015–2017.

Meanwhile, countries in Europe and in the Near and Middle East continued to play the most significant role in amphetamine production and trafficking. The countries reporting the largest amphetamine seizures in 2020 were mainly affected by the trafficking of "captagon".

MAP 8 **Predominance of use of amphetamine and methamphetamine products, by country, 2020 (or the most recent year for which data are available)**



Source: UNODC, responses to the annual report questionnaire.

Note: Information presented is based primarily on the ranking of prevalence of use of stimulant drugs in the respective country, confirmed by the reported annual prevalence of use data, or, in case of non-availability of either, on the data on drug-related treatment (number of treated individuals or ranking of primary drugs in persons entering treatment). In some countries, either substance plays a minor role in the drug market and/or the difference between their prevalence can be minimal (e.g. in the case of Uruguay). Establishing whether amphetamine or methamphetamine products are more prevalent can be difficult, as the different amphetamines are monitored under a single category in some data sources.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Wastewater analysis revealed expansion of methamphetamine use to new locations

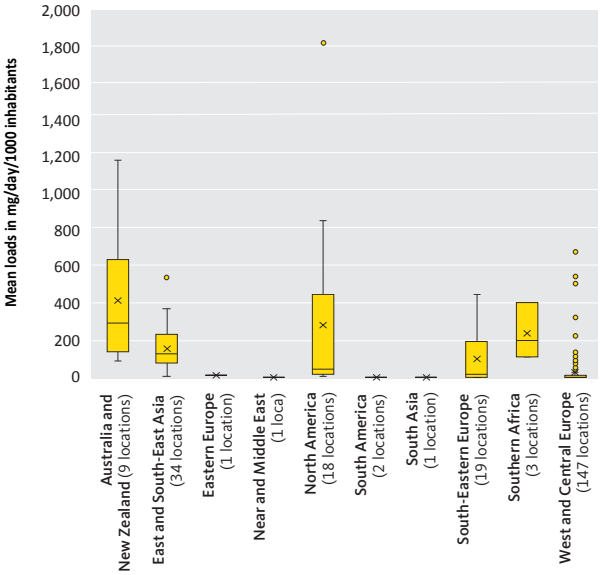
Methamphetamine use has traditionally been concentrated in North America and more recently in East in South-East Asia, and Australia and New Zealand. Recent wastewater analyses found comparable levels of estimated standardized total consumption in some cities in Western and Central Europe and Southern Africa, as well as South-Eastern Europe. Other data also suggest growing methamphetamine use in other regions. For example, the number of people in treatment for methamphetamine use disorders in Bangladesh more than doubled between 2016 and 2019,[32] and there have been accounts of a recent emergence of methamphetamine use in Nigeria,[33] as well as among youth in Afghanistan in line with increases in local methamphetamine production.[34]

North America: trends in methamphetamine markets

Increases in methamphetamine trafficking in North America

Most of the methamphetamine manufactured in North America, largely in Mexico, is for consumption within that subregion, predominantly in the United States. Some of it is also exported to overseas markets, mostly to East and South-East Asia, Oceania and, to a lesser extent, Europe, as evidenced by the data on origin and departures reported for the period 2016–2020.

FIG. 35 Mean loads of methamphetamine per 1,000 inhabitants in selected cities with available data, by subregion, 2015–2021



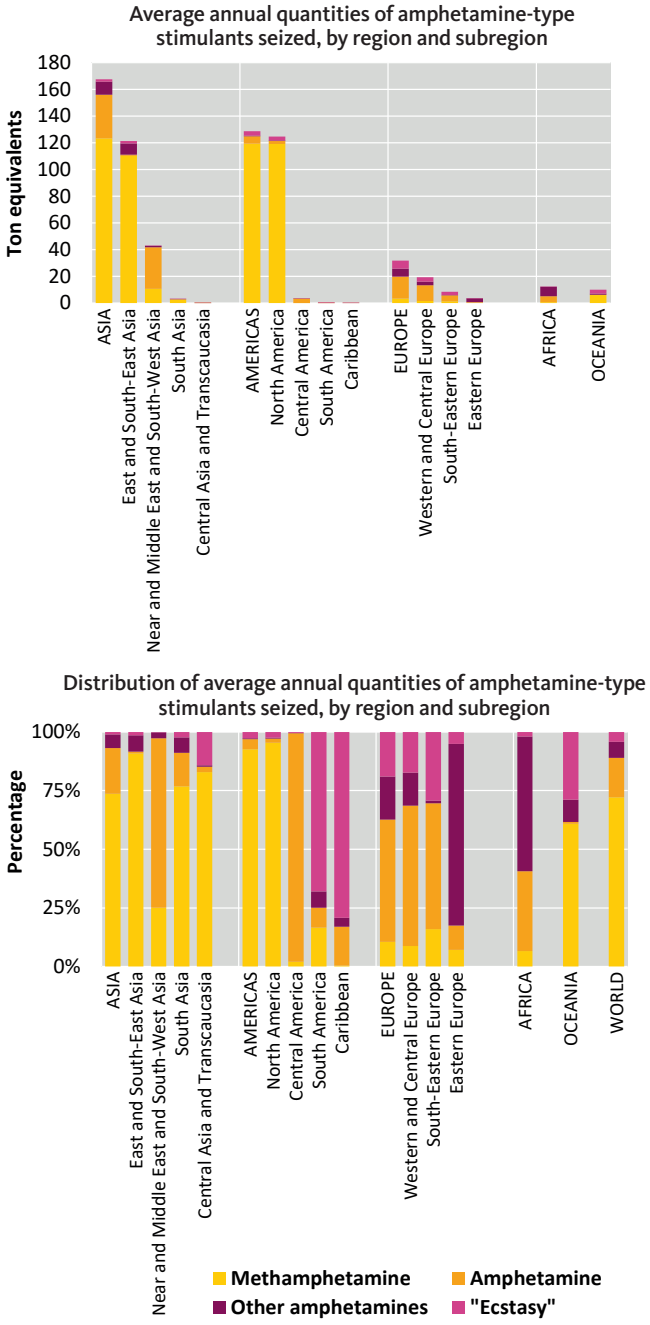
Source: UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe and on scientific literature.

Note: Average quantity of methamphetamine found in wastewater in 235 locations. Comparability between SCORE group estimates and published estimates may not be complete. Population-normalised loads are the amounts of the target drug residue (in this case methamphetamine) entering the wastewater treatment plant, divided by the population served by the wastewater treatment plant, which shows the amount of a substance consumed per day per 1 000 inhabitants. Small circles represent outliers (locations with higher mean loads than 1.5 times the interquartile range of values for a given subregion. Statistical outliers may be related to the dumping of waste from local manufacture.

The quantities of methamphetamine seized in North America reached a record high in 2020.

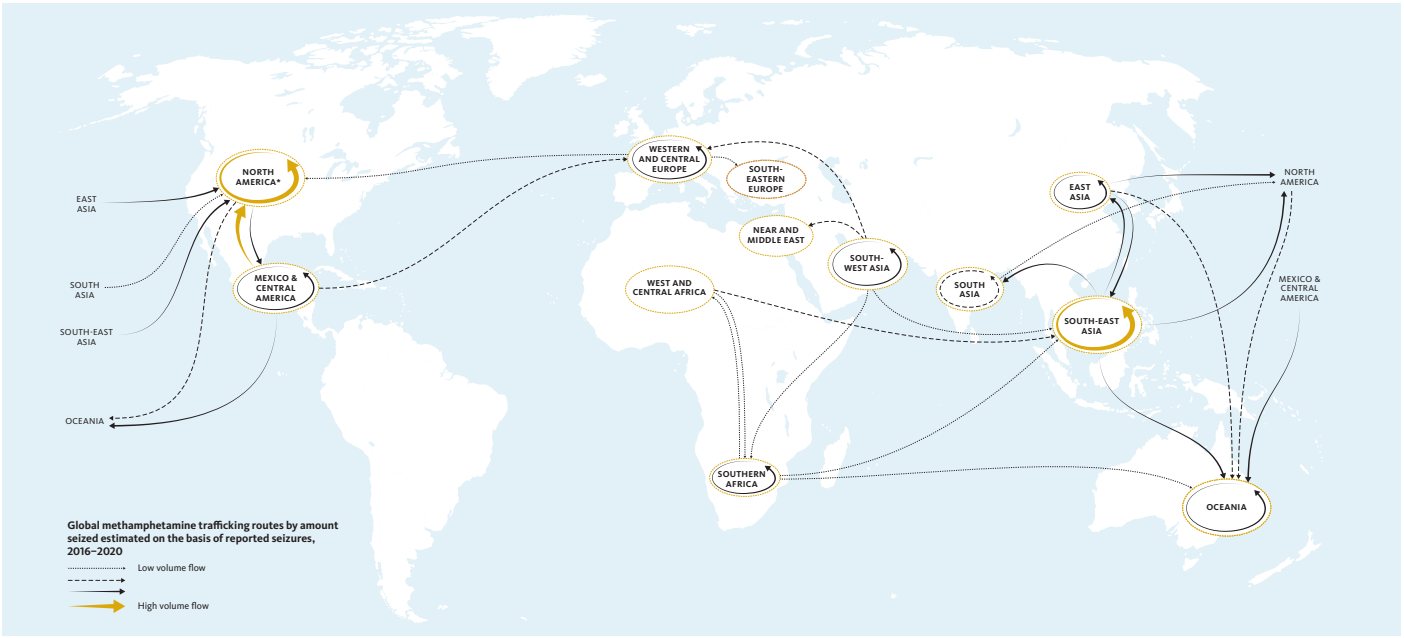
Data on individual drug seizures do not indicate any reduction in drug trafficking activities or shifts in trafficking patterns in North America during the period 2020–2021 compared with 2018–2019, and data on annual seizures for 2020 do not indicate any disruptions in the supply of methamphetamine to the United States, where methamphetamine seizures have increasingly spread nationwide, outward from the traditional concentration in the south-west of the country.

FIG. 36 Geographical distribution of seizures of amphetamine-type stimulants, 2016–2020



Source: UNODC, responses to the annual report questionnaire.

MAP 10 Main methamphetamine trafficking flows as described in reported seizures, 2016–2020

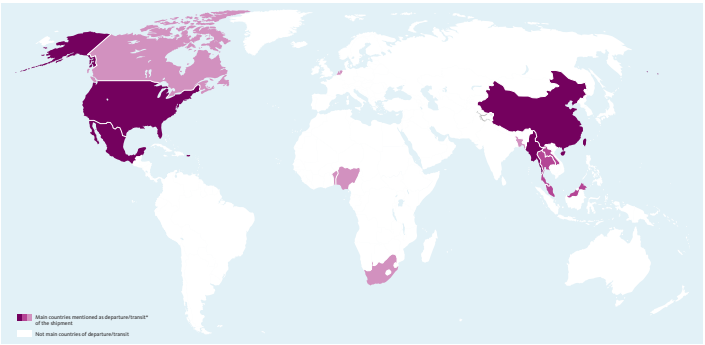


The size of the route is based on the total amount seized on that route, according to the information on trafficking routes provided by Member States in the annual report questionnaire, individual drug seizures and other official documents, over the 2016–2020 period. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered a broadly indicative of existing trafficking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking: origins of the arrows indicate either the area of departure the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin may not reflect the country in which the substance was produced.

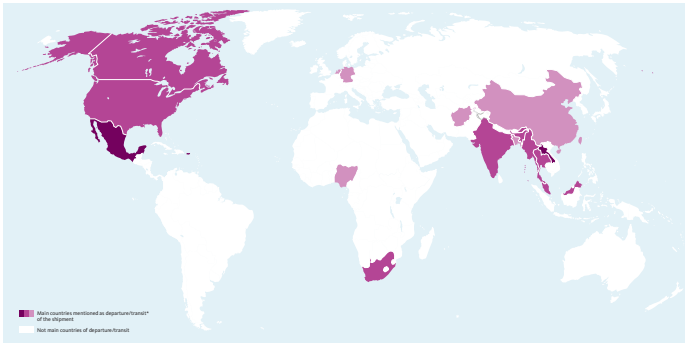
** North America excluding Mexico.*

MAP 9 Main departure or transit countries of methamphetamine shipments as described in reported seizures, 2015–2017 and 2018–202

2015–2017



2018–2020



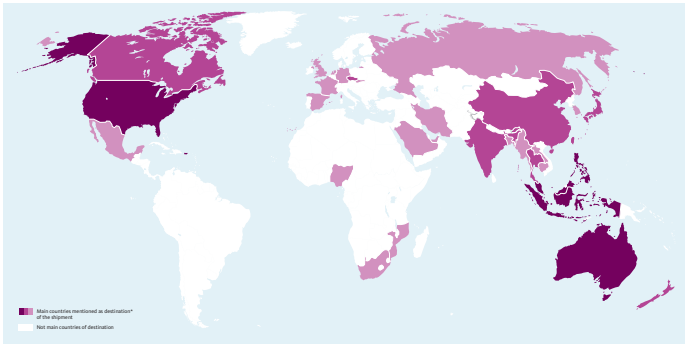
** A darker shade indicates a larger amount of methamphetamine being seized with the country as departure or transit of the shipment, according to the information on tracking routes provided by Member States in the annual report questionnaire, individual drug seizures and other ocial documents, over the 2015–2017 and 2018–2020 period. The departure or transit may not reflect the country in which the substance was produced. The main countries mentioned as departure or transit were identified on the basis of both the number of times they were identified by other Member States as departure/transit of seizures, and the annual average amount that these seizures represent during the periods.*

Source: UNODC.

Note: For more details on the criteria used, please see the Methodology section of this document.

The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

MAP 11 Main destination countries of methamphetamine shipments as described in reported seizures, 2016–2020

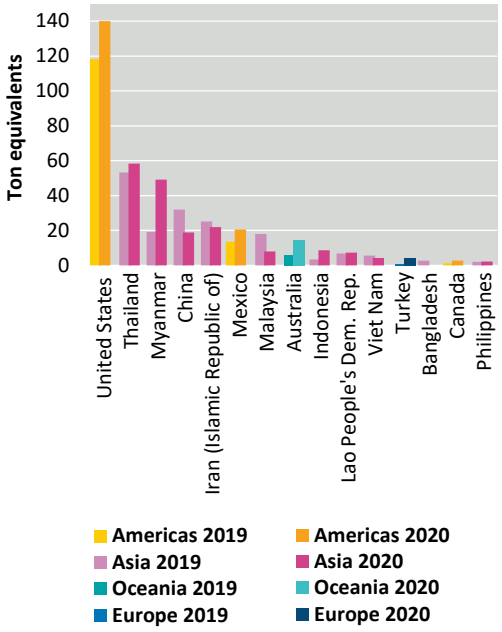


Source: UNODC.

** A darker shade indicates a larger amount of methamphetamine being seized with the country as destination of the shipment, according to the information on tracking routes provided by Member States in the annual report questionnaire, individual drug seizures and other ocial documents, over the 2016–2020 period. The main countries mentioned as destination were identified on the basis of both the number of times they were identified by other Member States as departure or destination of seizures, and the annual average amount that these seizures represent during the 2016–2020 period. For more details on the criteria used, please see the Methodology section of thisdocument.*

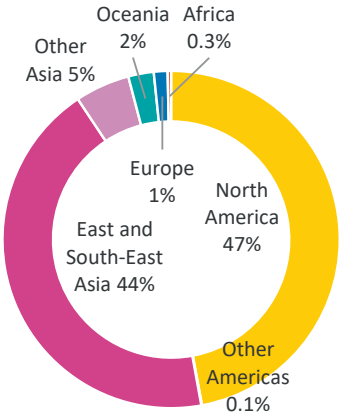
The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

FIG. 38 Countries reporting the largest quantities of methamphetamine seized, 2019 and 2020



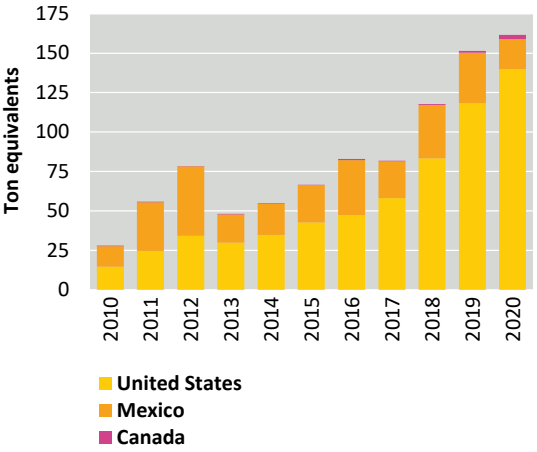
Source: UNODC, responses to the annual report questionnaire.

FIG. 37 Distribution of quantities of methamphetamine seized, 2016–2020



Source: UNODC, responses to the annual report questionnaire.

FIG. 39 Quantities of methamphetamine seized in North America, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

Long-term increase in methamphetamine use and related harm in North America

The level of prevalence of past-year use of amphetamines in North America in 2020 (3.9 per cent) represents a considerable increase from the 2010 estimate of 1.3 per cent.

The use of both methamphetamine and other amphetamines, the latter mostly in the form of the non-medical use of pharmaceutical stimulants, is prevalent in North America. While the prevalence of methamphetamine use among the general population is relatively lower (although increasing) than that of the non-medical use of pharmaceutical stimulants, it is associated with more harm to health.[35]

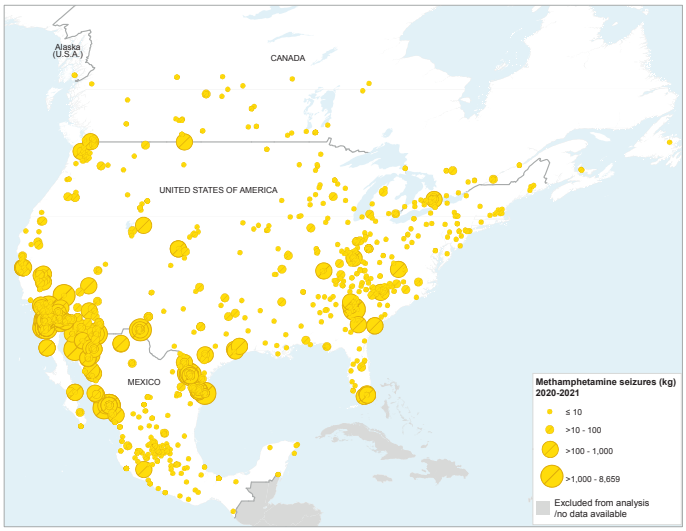
In North America, use of methamphetamine is relatively low. Use in the last year was estimated at 0.5 per cent of Canadians aged 15 or older in 2019,[36] 0.2 per cent of Mexicans aged 12-65 in 2016 (the year of the latest data available);[37] and in the United States 0.9 per cent among inhabitants aged 12 and older, although caution is needed in interpreting the 2020 data point.[38]

A higher level of intensive methamphetamine use, as compared with the use of other amphetamines, is clearly visible in Mexico, where 29,680 methamphetamine users were in drug treatment in 2020, in comparison with only 727 amphetamine users,[39] and in the United States, where in 2019 there were 209,014 admissions into public treatment for methamphetamine use disorders, compared with 10,810 admissions into treatment for the use of other amphetamines.[40]

The most common route of administration of methamphetamine in the United States and Canada is smoking, followed by injection.[41] In Mexico, various routes of administration were reported (snorting, swallowing, smoking and injection).[42, 43, 44]

Methamphetamine use among high-risk users often exists in the region,[45] and likely increasingly,[46] in a context of polydrug use. A common, and in some studies the most common,[47] combination is the use of methamphetamine with opioids such as heroin[48] or fentanyl.[49] Users who consciously use this combination of drugs often do so to offset the effects of each drug,[50] or to experience an enhanced, synergistic or more

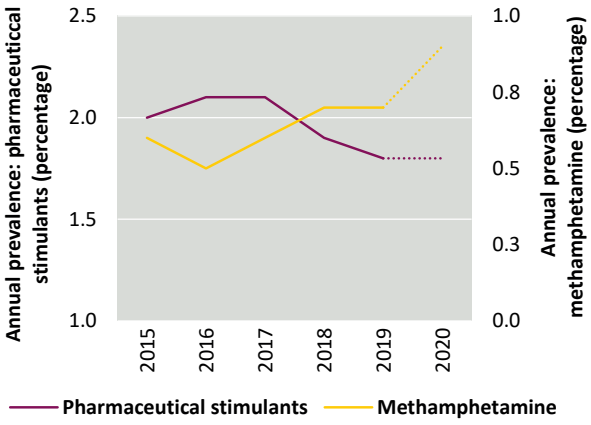
MAP 12 Significant individual methamphetamine seizures in North America, 2020–2021



Source: UNODC, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations.

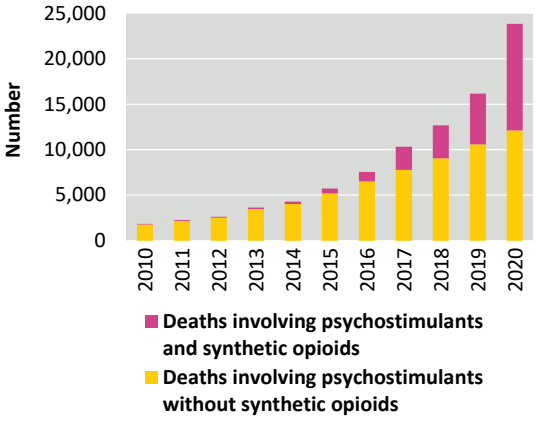
FIG. 40 Non-medical use of pharmaceutical stimulants and use of methamphetamine among the population aged 12 and older, United States, 2015–2020



Source: United States, Substance Abuse and Mental Health Services Administration, Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health (Rockville, Maryland, Center for Behavioral Health Statistics and Quality, 2021), and other years.

Note: The dotted lines indicate unknown comparability of the data collected in 2020 compared to previous years, due to necessary methodological changes in data collection during the COVID-19 pandemic, whereby most data have been collected online.

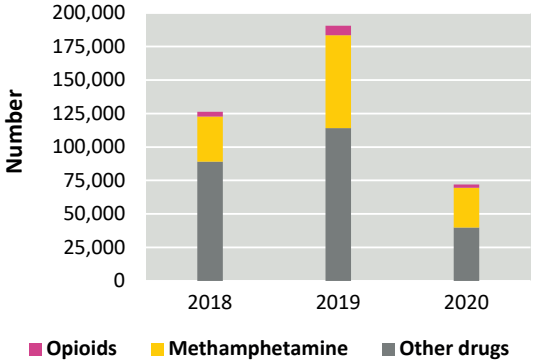
FIG. 41 Overdose deaths attributed to psychostimulants with and without synthetic opioids, United States, 2010–2020



Source: United States, Centers for Disease Control and Prevention, National Center on Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC Wonder).

Note: The category of "psychostimulants" refers to psychostimulants with abuse potential and mainly includes methamphetamine; and the category of "synthetic opioids" is dominated by fentanyl.

FIG. 42 People in treatment for drug disorders, by primary drug, Mexico, 2018–2020



Source: UNODC, responses of Mexico to the annual report questionnaire.

euphoric high.[51] Such combinations exhibit considerable health risks and morbidity,[52] with the highest risk being posed by the mixing of potent opioids such as fentanyls with methamphetamine at the source of supply, as users are often unaware of the use of opioids in such mixtures.[53] Data on trends in fatal drug overdoses in the United States show a sharp increase in health-related harms associated with both the use of methamphetamine alone and the use of methamphetamine mixed with opioids, with an acceleration of such harms during the pandemic.[g]

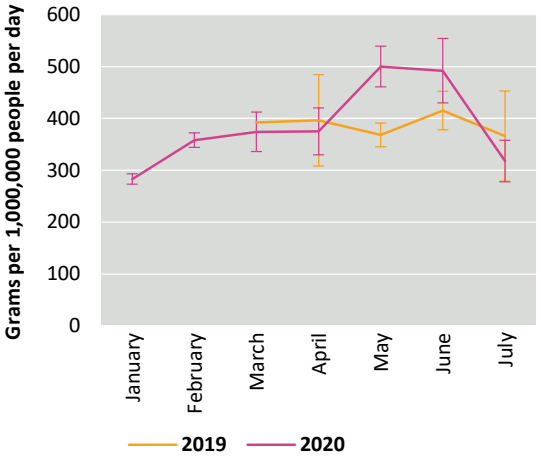
Methamphetamine use and associated harm is increasing across all three countries in North America. In Canada, where the most commonly used form of methamphetamine is crystalline methamphetamine, there have been signs of increased availability, use and harm over the past 10 years,[54] particularly in the western provinces.[55] These signs include overall increases in methamphetamine possession violations (from 5 incidents per 100,000 population in 2010 to 27 in 2020),[56, 57] the proportion of individuals reporting the use of ATS in drug treatment (up 13 per cent between 2016/2017 and 2017/2018), access to treatment and services to prevent harm (in most jurisdictions),[58] methamphetamine-related deaths[59] and inpatient hospitalizations attributable to methamphetamine.[60]

Mexico reported a 218 per cent increase in the number of clients in drug treatment with ATS (mainly methamphetamine) as their primary drug between 2013 and 2020, with methamphetamine admissions outnumbering even alcohol.[61] Wastewater analyses show that the use of methamphetamine in Mexico may go beyond areas near to the border with the United States, where many studies have documented use among youth, sex workers, deportees and men who have sex with men.[62, 63] A caveat however remains that the elevated levels of methamphetamine in wastewater may also be related to the dumping of waste from local manufacture.

In the United States, admissions into treatment for the use of methamphetamine as the primary drug rose from 108,592 admissions in 2010 to 209,014 in 2019.[64] Increases in the utilization of emergency psychiatric services by methamphetamine users,[65] hospitalizations for methamphetamine-associated heart failure,[66] the number of cases managed by poison control centres involving methamphetamine as the main

g See also booklet 3 of the present report, entitled "*Drug Market Trends: Opioids and Cannabis*."

FIG. 43 Combined methamphetamine load per capita in the cities of Halifax, Montréal, Toronto, Edmonton and Vancouver, Canada, March to July 2019 and January to July 2020



Source: Canada, Statistics Canada, The Daily, "Wastewater analysis suggests that consumption of fentanyl, cannabis and methamphetamine increased in the early pandemic period", 26 July 2021.

Note: All error bars displayed refer to confidence intervals of 95 per cent.

substance of concern and the overall rate of fatality attributable to methamphetamine per 100,000 population[67] all confirm increase in the use of methamphetamine and related harms.

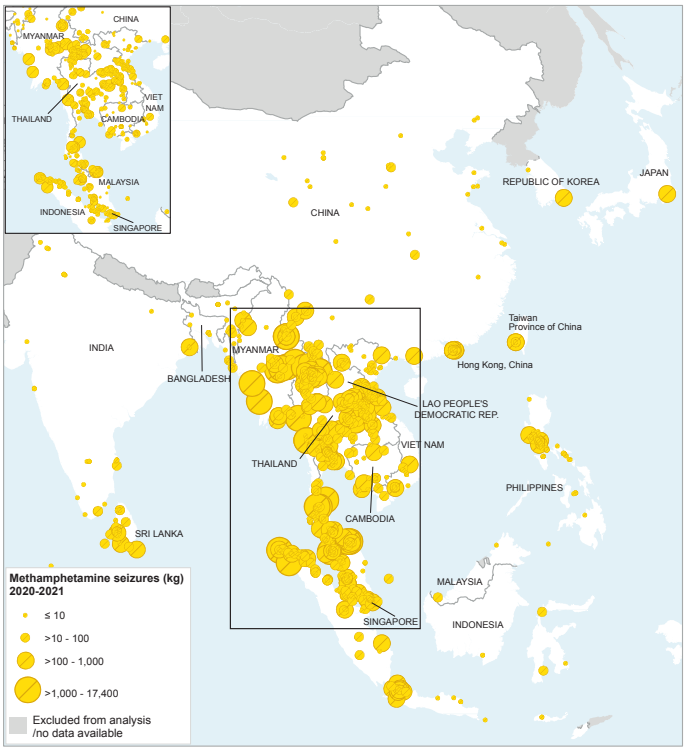
The trend in methamphetamine use during the COVID-19 pandemic is less clear in North America. Canada and Mexico reported an overall stable situation between 2019 and 2020,[68] but wastewater analysis in some Canadian cities recorded a temporary increase in May and June 2020.[69] In the United States, an apparent increase was recorded through the household survey, although data for 2020 may not be comparable with those of previous years, owing to methodological changes necessitated by the pandemic.[70] Wastewater analysis in selected cities identified moderate declines in total methamphetamine consumption in three locations: two communities in western Kentucky and northern Tennessee (16 per cent),[71] and Seattle, Washington (5 per cent).[72]

East and South-East Asia: trends in methamphetamine markets

Methamphetamine seizures continued to rise rapidly in South-East Asia but fell slightly in East Asia

Methamphetamine seizures in South-East Asia continued to rise rapidly in 2020 (30 per cent increase from 2019), with the greatest increases in absolute numbers reported by Myanmar, followed by Malaysia. There are no indications that the COVID-19 pandemic had an impact on methamphetamine trafficking in the subregion, as seizure data indicated an expansion of trafficking activities during the pandemic.

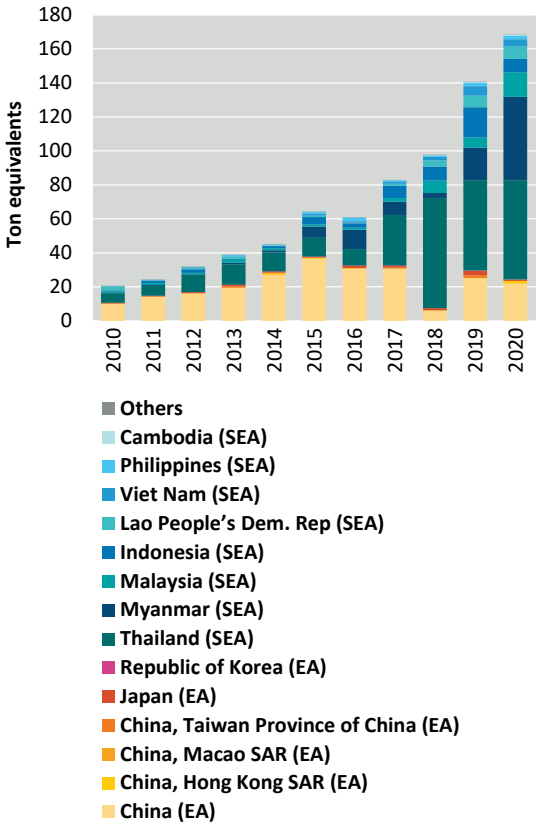
MAP 13 Significant individual methamphetamine seizures in East and South-East Asia and in South Asia, 2020–2021



Source: UNODC, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

FIG. 44 Seizures of methamphetamine in East and South-East Asia, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

Note: EA = East Asia; SEA = South-East Asia.

Meanwhile, seizures in East Asia fell in 2020, down 18 per cent from a year earlier and down 36 per cent since their peak in 2015. This was mainly due to declines reported in China, where the manufacture, trafficking and use of methamphetamine appear to have declined in recent years. Japan and the Republic of Korea also reported declines in 2020.

In East and South-East Asia, some countries show signs of stabilization amidst long-term increase in methamphetamine use

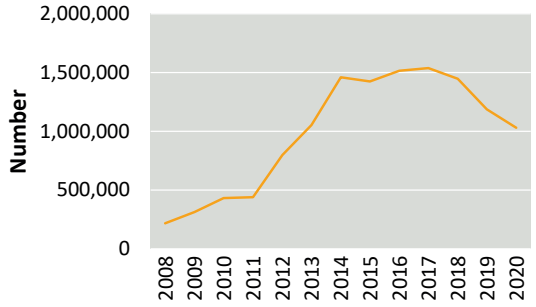
East and South-East Asia represents the second largest market for amphetamines in the world. Past-year prevalence of the use of amphetamines in East and South-East Asia is estimated to be just below the global average at 0.7 per cent of inhabitants aged 15–64 in 2020. This translates to nearly 10 million past-year users, but this number may be even larger as reliable estimates of the number of people who use drugs, including methamphetamine, are largely unavailable for most of the countries in the region.

Methamphetamine is the most prevalent amphetamine used in the subregion and the drug most reported in drug treatment in almost all of the countries. According to a joint report of ASEAN Member States,[73] almost 200,000 people were treated for methamphetamine use in the region in 2020, mainly reflecting the situation in Thailand.[74] Of the 1.03 million registered drug users in China in 2020, 57.2 per cent reported having used synthetic drugs, mainly methamphetamine.[75] Japan reported methamphetamine as the most used drug in the country in 2019[76] and a recent nationwide survey among patients in outpatient treatment for drug-related psychiatric disorders at psychiatric hospitals showed that 53 per cent used methamphetamine as their main drug.[77] The Republic of Korea and Timor-Leste also reported methamphetamine as the drug most used in 2020,[78] and Mongolia reported methamphetamine as the most used drug in the country in 2019, with a large increase in use in that year.

Almost three quarters of users in treatment for methamphetamine use disorders in ASEAN countries consume methamphetamine orally in the form of tablets, and about a quarter of users use crystalline methamphetamine.[79] A population survey conducted in 2019 in Thailand found that 0.7 per cent of the population aged 12–65 had used crystalline methamphetamine in the past year, while 1.3 per cent had used methamphetamine pills ("yaba"), altogether representing more than a million people. Similarly, in 2019 in Indonesia, 0.6 per cent of the population aged 15–64, or more than a million people, had used methamphetamine in the past year.

Quantitative and qualitative information based on population survey data in Thailand, including on the prevalence of use, on the perception of increased use in Brunei Darussalam, Cambodia, Malaysia, the Republic of Korea and Singapore, and on the number of police registrations of treated users in Viet Nam, points to

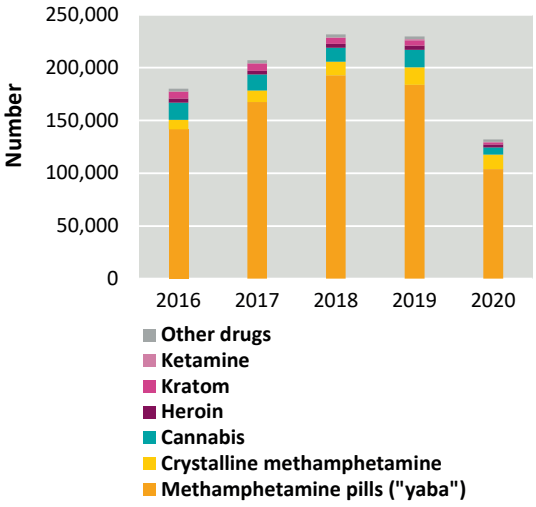
FIG. 45 Registered users of synthetic drugs (mainly methamphetamine) in China, 2008–2020



Source: China, Office of the National Narcotics Control Commission, *China Drug Situation Report 2020*.

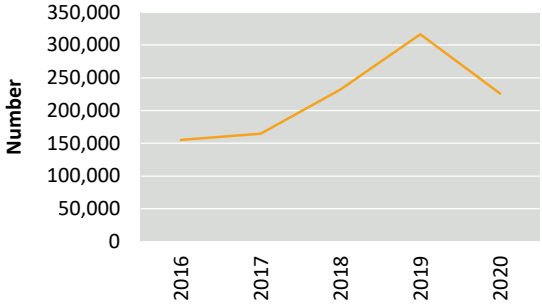
an increase in methamphetamine use in most countries in the region over the past decade, up until 2019.[80] In Thailand, the number of people using methamphetamine tablets increased by 50 per cent and those using crystalline methamphetamine increased ninefold between 2016 and 2019.

FIG. 47 People in drug treatment, by primary drug, Thailand, 2016–2020



Source: Manop Kanato and others, eds., *ASEAN Drug Monitoring Report 2020* (Bangkok, ASEAN Narcotics Cooperation Center (ASEAN-NARCO), September 2021.

FIG. 46 Admissions into treatment for ATS (mainly methamphetamine) use disorders in countries of the Association of Southeast Asian Nations, 2016–2020



Sources: Manop Kanato and others, eds., *ASEAN Drug Monitoring Report 2020* (Bangkok, ASEAN Narcotics Cooperation Center (ASEAN-NARCO), September 2021) and *ASEAN Drug Monitoring Report 2016* (Bangkok, ASEAN-NARCO, August 2017).

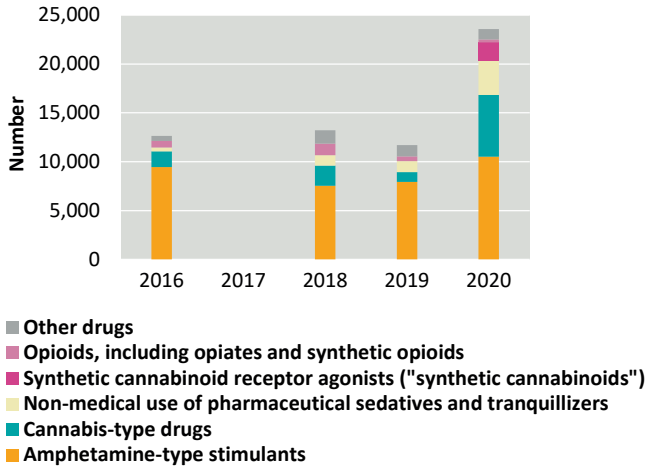
Note: The value for 2016 is an estimate based on the total number of drug users admitted into treatment in 2016 and the reported proportion of methamphetamine users.

More recent trends in methamphetamine use are less clear and after 2019 are difficult to interpret, owing to interruptions in data collection and the provision of services resulting from the COVID-19 pandemic. Nevertheless, in China, the number of registered users of synthetic drugs declined over the past three years, after years of continuous increase.

The total number of users of ATS, predominantly methamphetamine, admitted into drug treatment in the ASEAN region declined in 2020 after a period of continued increase,[81] mainly reflecting the number of people in treatment for methamphetamine use disorders in Thailand[82] and Malaysia.[83] Moreover, this decline may mostly reflect the overall decrease in access to treatment services during the pandemic observed globally rather an actual change in methamphetamine use.[h]

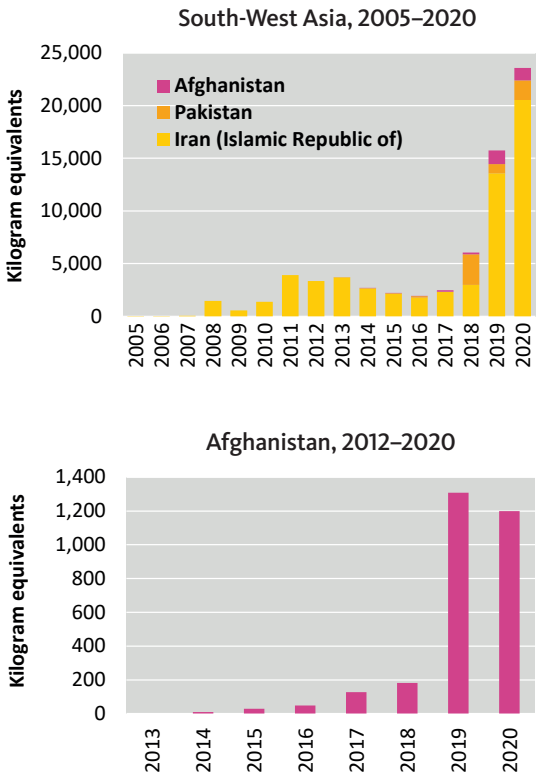
h See also the chapter entitled "*Responses to drug use*" in booklet 2 of the present report.

FIG. 48 Number of treated clients, by primary drug, Indonesia, 2016–2020



Source: Manop Kanato and others, eds., *ASEAN Drug Monitoring Report 2020* (Bangkok, ASEAN Narcotics Cooperation Center (ASEAN-NARCO), September 2021.

FIG. 49 Quantities of methamphetamine seized in South-West Asia, 2005–2020



Sources: UNODC, responses to the annual report questionnaire; UNODC, *Drug Situation in Afghanistan 2021* (November 2021).

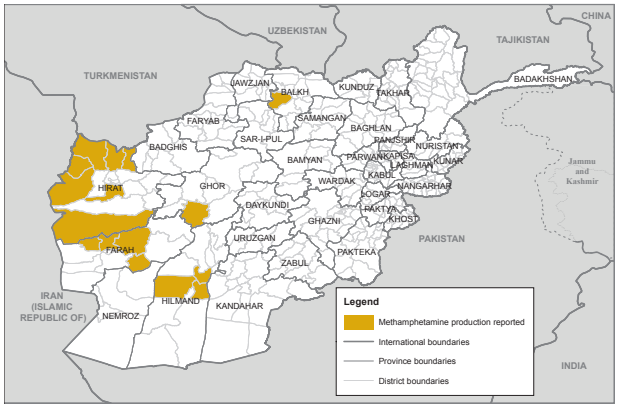
South-West Asia: trends in methamphetamine markets

Increasing production and trafficking of methamphetamine in South-West Asia, in particular in Afghanistan

Authorities of the Islamic Republic of Iran reported in 2019 that Afghan smugglers had captured a large part of the Iranian methamphetamine market and were using the Islamic Republic of Iran as a transit country to reach markets beyond its borders. Some 90 per cent of the methamphetamine seizures made in the Islamic Republic of Iran in 2019 were reported to be of Afghan origin.[84] The situation was similar in neighbouring Pakistan, where authorities reported that Afghanistan was the most frequently detected country of departure for methamphetamine seized in 2020.[85]

The first seizures of methamphetamine manufactured in Afghanistan were reported in 2012, and reports of rapid growth in domestic manufacture and seizures soon followed. By 2016, seizure data suggested that methamphetamine was, to a growing extent, also being used to supply markets in neighbouring countries,[86] especially those of the Islamic Republic of Iran close to the western border of Afghanistan, as manufacture was also concentrated in that area of the country. Trafficking of methamphetamine manufactured in Afghanistan continued to expand across the region and beyond, and in the period 2019–2021 more than 10 countries, including countries in Asia, Europe and Africa, reported seizures of methamphetamine originating in Afghanistan. Moreover, countries as far afield as Oceania also reported seizures of shipments of methamphetamine sent from countries in South-West Asia, which were probably transit areas for Afghan methamphetamine.[87, 88]

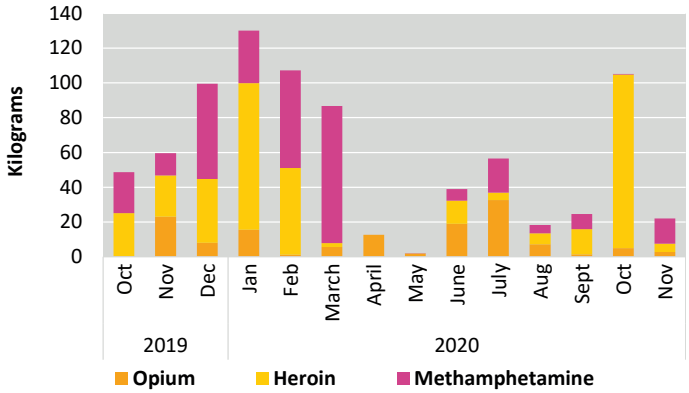
MAP 14 Afghan districts where methamphetamine manufacture was reported in 2021



Source: Government of Afghanistan, Ministry of Interior Affairs, May 2021.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

FIG. 50 Methamphetamine, heroin and opium seizures in the Province of Kabul, Afghanistan, October 2019–November 2020



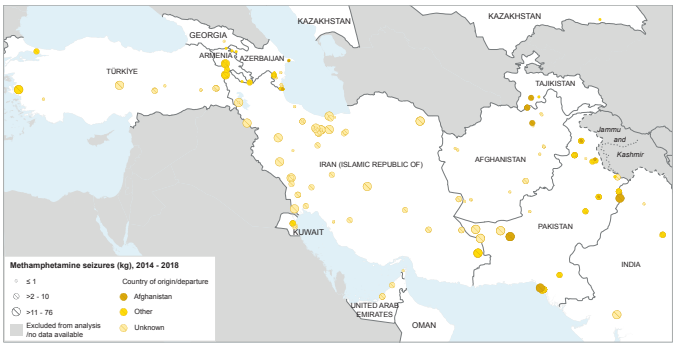
Source: Drug Situation in Afghanistan 2021, Latest findings and emerging trends, UNODC Research Brief, November 2021.

Note: The defined daily dose for statistical purposes (S-DDD) for heroin is 30 mg, and the S-DDD for methamphetamine is 15 mg (INCB, Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances (E/INCB/2021/2); INCB, Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances (E/INCB/2021/3))); the purity of heroin, however, is in many cases far lower than the purity of methamphetamine. Thus, unless purity is adjusted, a direct comparison between 1 kg of methamphetamine and 1 kg of heroin seized seems to be rather reasonable.

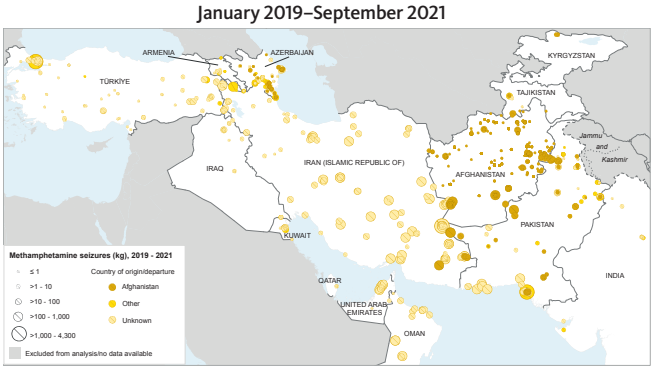
In some parts of Afghanistan, seizures of methamphetamine exceeded seizures of opium and heroin in several months of 2019 and 2020. Seizure data also suggest that trafficking of methamphetamine is taking place alongside the trafficking of opiates, with the seizures of methamphetamine, seized together with heroin in Kandahar and Nangarhar, indicating that trafficking in methamphetamine benefits from the existence of well-established heroin trafficking networks operating both inside and outside Afghanistan.[89]

MAP 15 Significant seizures of methamphetamine in selected countries of the Near and Middle East/South-West Asia, South Asia, Central Asia, Caucasus and Turkey, by origin, 2014–2018 and 2019–2021

2014–2018



January 2019–September 2021

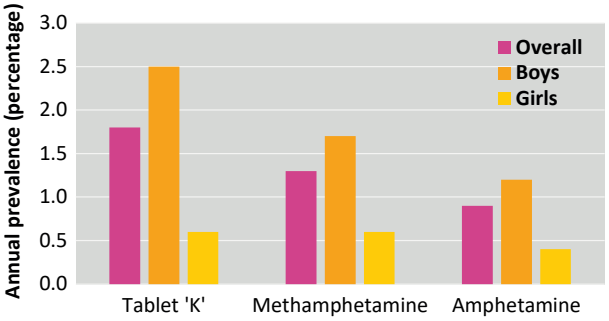


Source: UNODC, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Sources: UNODC, responses to the annual report questionnaire and UNODC, Drugs Monitoring Platform.

FIG. 51 Use of amphetamines among adolescents in Afghanistan, 2018



Source: UNODC and Afghanistan, *Study on Substance Use and Health among Youth in Afghanistan 2018* (April 2021).

Growing use of methamphetamine in South-West Asia

Methamphetamine use has been increasing in Afghanistan, possibly because of the emergence of methamphetamine manufacture and trafficking in the country in recent years. In 2015, a household survey based on biological samples suggested that methamphetamine use was relatively low. ATS were detected in the biological samples of people in approximately 2 per cent of the sampled households and in less than 1 per cent of the sampled population.[90] Information based on people in drug treatment highlights a gradual expansion of methamphetamine use in the last decade. In 2012, about 8 per cent of all people registered in drug treatment services in four provinces were in treatment for methamphetamine use. Most of the registrations for methamphetamine use were in the provinces in the north-east and south-west of Afghanistan.[91] In recent years, a sizeable number of people in treatment were reported to have used crystalline methamphetamine (also known as "shisha" locally) concomitantly with heroin – a pattern of use observed in most regions with established opioid use.[92, 93] In 2018, a substantial proportion of adolescents (15–18 years old) reported the use of amphetamines in Afghanistan; 1.3 per cent of adolescents reported the use of methamphetamine, less than 1 per cent had used amphetamine and 1.8 per cent had used "tablet K" in the past year.[94, 95, 96] The use of amphetamines was reported more often among males than among females.

The use of methamphetamine in the Islamic Republic of Iran was uncommon before 2005. Since then, methamphetamine use in the country has been observed among young people who transitioned to it after using other drugs, as well as among people who use opioids and, in particular, among those in long-term opioid agonist treatment.[97, 98] In 2021, a meta-analysis estimated the past-year prevalence of the use of amphetamine-type stimulants among the general population at 2.4 per cent,[99] and in 2015 there were an estimated 400,000 regular methamphetamine users in the country.[100] Methamphetamine use is reported to have rapidly increased over the past decade in the Islamic Republic of Iran, with prices substantially decreasing, especially from 2019 onwards.[101] The use of methamphetamine has increased health-related harms among people who use drugs, especially among

Methamphetamine use and trafficking on the rise in the Gulf countries and the broader Near and Middle East region

Even though ATS use in the Near and Middle East continues to be characterized by high levels of captagon use and trafficking, recent years have seen an increase in the use and trafficking of methamphetamine in the Near and Middle East.

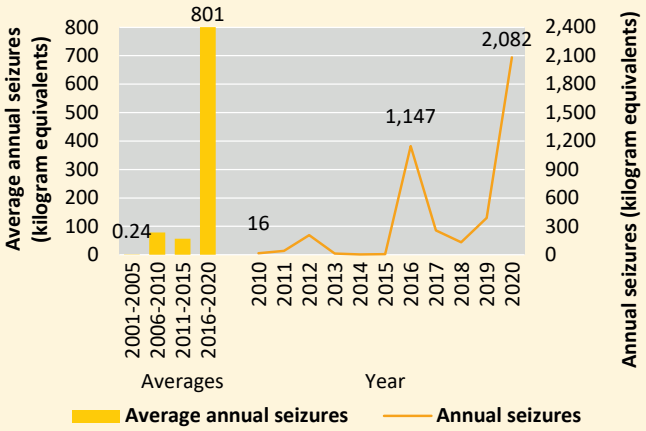
Out of 13 countries in the Near and Middle East reporting any drug seizures to UNODC, 12 countries reported methamphetamine seizures over the last decade in this subregion, up from 7 countries during the first decade of the new millennium. The largest methamphetamine seizures over the period 2016–2020 were reported by the United Arab Emirates (50 per cent of all methamphetamine seized in the Near and Middle East), followed by Bahrain (28 per cent), Saudi Arabia (9 per cent), Iraq (9 per cent), Israel (2 per cent) and Kuwait (2 per cent).

Most of the methamphetamine seized in this sub-region has traditionally been sourced from East and South-East Asia, notably from Thailand and the Philippines and, to a lesser extent, Indonesia and Vietnam.[i] The street name of methamphetamine in the Gulf countries is usually the same as in East and South-East Asia – "shabu".[ii]

More recently, however, there have been indications that countries in South-West Asia may have been at the origin of the methamphetamine found in the Gulf countries and in the Middle East, sometimes trafficked via Iraq to neighbouring countries. Such methamphetamine usually originated or transited the Islamic Republic of Iran and may include some methamphetamine originating in Afghanistan.[iii]

In parallel, demand for methamphetamine and harms associated with its use also seem to be on the rise though population level estimates are not available in the region. One recent paper which reviewed drug related deaths in one of the major cities in Saudi Arabia, concluded that between 2016 and 2018 overdose deaths attributed to the use of methamphetamine had increased by 500 per cent.[iv] Most of the methamphetamine overdose deaths involved use of another drug such as heroin. The paper highlighted that methamphetamine could have found its way to amphetamine users seeking new experience, who may not know its adverse effects. Another recent paper on methamphetamine deaths in Kuwait found that over the period 2014-2018, analysis of the 344 drug overdose deaths found morphine in 80 per cent of the cases , followed by benzodiazepine (43 per cent), amphetamine (23 per cent) and methamphetamine (23 per cent). As a trend, overdose deaths where methamphetamine was found increased from 4.8 per cent of drug overdose deaths in 2014 to 36.8 per cent such deaths in 2018.[v] Although overdose deaths among women were much fewer than among men, methamphetamine was found more often among women overdose cases than among men.

Seizures of methamphetamine in the Near and Middle East, 2001–2020



Source: UNODC, responses to the annual report questionnaire.

The emergence of methamphetamine use in Iraq was reported in 2012, when, on the basis of data from medical and psychiatric hospitals, outpatient clients, health centres, surveys of medical patients and prisoners, and law enforcement reports, "captagon", crystalline methamphetamine and tramadol were reported as the new drugs of concern.[vi] Recently it has been reported that there has been an evident increase in substance use, in particular the use of methamphetamine as well as "captagon", among groups of all ages and genders, including both employed and unemployed persons, in Iraq.[vii]

i UNODC, responses to the annual report questionnaire.

ii Ahmed I. Al-Asmari, 'Methamphetamine-Related Postmortem Cases in Jeddah, Saudi Arabia', *Forensic Science International* 321 (April 2021): 110746.

iii UNODC, Drugs Monitoring Platform.

iv Ahmed I. Al-Asmari, 'Methamphetamine-Related Postmortem Cases in Jeddah, Saudi Arabia', *Forensic Science International* 321 (April 2021): 110746.

v Salah Al-Waheeb, Noura Al-Omair, and Assad Mahdi, 'Patterns of Drug Overdose Deaths in Kuwait from 2014 to 2018', *Public Health in Practice* 2 (November 2021): 100181.

vi Nesif J. Al-Hemiary et al., 'Drug and Alcohol Use in Iraq: Findings of the Inaugural Iraqi Community Epidemiological Workgroup', *Substance Use & Misuse* 49, no. 13 (November 2014): 1759–63.

vii Response of Iraq to the annual report questionnaire for 2020.

opioid users in opioid agonist treatment. Between 47 and 90 per cent of clients of methadone maintenance treatment services in the period 2012–2016 were assessed as dependent on methamphetamine, with a higher prevalence among female clients.[102, 103, 104] Meanwhile, the incidence of deaths involving the presence of methamphetamine increased in Teheran from 2.05 per million in 2011 to 21.93 per million in 2018.[105]

Oceania: trends in methamphetamine markets

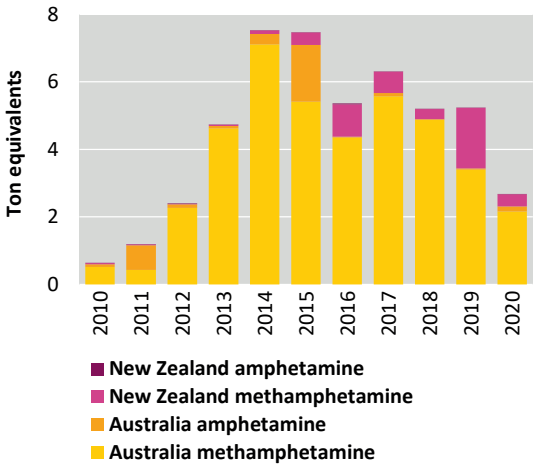
Overall methamphetamine seizures declined in Oceania in 2020 although imports increased

The vast majority of ATS seizures in Oceania in 2020 were of methamphetamine. Such seizures were at their lowest level since 2012.[106]

Nevertheless, border seizures of methamphetamine reached a new record high in Australia in the fiscal year 2019/20. Taken together with the decline in dismantled methamphetamine laboratories on Australian territory, this suggests a trend towards less domestic manufacture in the subregion and more imports.[107]

The high proportion of seized methamphetamine that had been manufactured from P-2-P and/or its precursors (70 per cent of seizures in the first two quarters of 2020, up from 14 per cent in 2011), points to the overall growing importance of North America as the origin of the methamphetamine found on the Australian market, although some of the P-2-P-based methamphetamine may have also originated in Asia.[108] The principal embarkation point of amphetamines entering Australia in 2019/20 was Malaysia.

FIG. 52 Seizures of amphetamines in Oceania, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

Fewer people have been using methamphetamine but greater quantities have been consumed, leading to more harm over the past decade in Oceania

The annual prevalence of the use of amphetamines in Oceania is estimated at 1.3 per cent of the population aged 15–64, representing roughly 330,000 users. The largest number of these users reside in the subregion of Australia and New Zealand (240,000 users) and the prevalence of the use of amphetamines is similar in both countries, where the use of methamphetamine dominates.[109, 110, 111]

The role of methamphetamine in the overall drug situation in the subregion of Australia and New Zealand seems to be slightly more pronounced in New Zealand. According to qualitative reporting, methamphetamine is the second most commonly used drug after cannabis. It is also the drug associated with the highest number of drug use disorders, the drug responsible for the highest number of people in drug treatment, and the most commonly injected drug.[112]

In Australia, methamphetamine is not the most common stimulant drug in terms of past-year use. However, methamphetamine closely follows cannabis as the drug most often associated with drug use disorders in the country and it is also both the most frequently injected substance and the substance leading the highest number of people into drug treatment,[113] accounting for 28 per cent or 60,987 of all treatment episodes in the country in 2020.[114] Together with opioids and benzodiazepines, methamphetamine is one of the three most commonly identified substances in drug-related deaths in Australia.[115]

The most used form of methamphetamine in Australia is crystalline methamphetamine, and it has been so since 2013, when it replaced the powder form, which was the dominant form up until then.[116] The most frequent methods of administration are smoking (used

by 93 per cent of regular stimulant users[117] and 53 per cent of those in drug treatment[118]) and injecting (used by 13 per cent of regular stimulant users[119] and 37 per cent of those in treatment[120]), followed by other methods, such as nasal insufflation ("snorting").

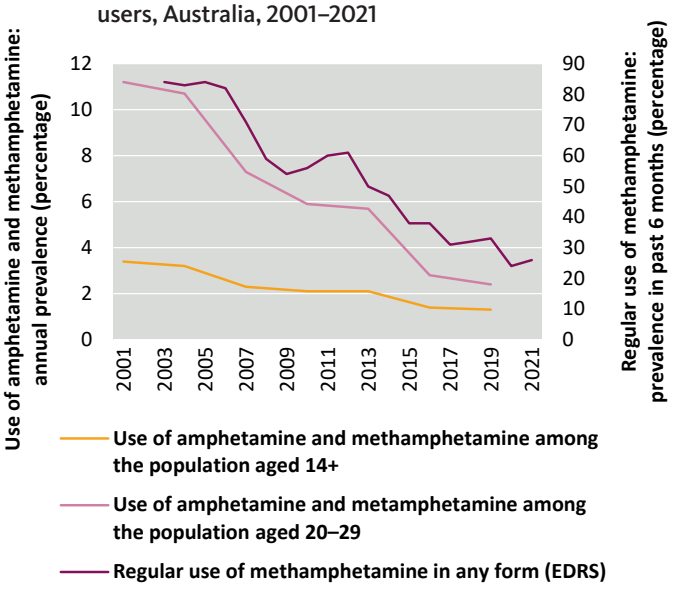
At the level of the general population, methamphetamine use in Australia and New Zealand has been rather stable, if not decreasing. In New Zealand, indicators show no significant differences in the use of amphetamines since 2011,[121] while Australia observed a gradual decrease in terms of the number of people reporting the use of amphetamines (mainly methamphetamine) in the past year, in particular among young people aged 20-29 years. The decrease in the number of methamphetamine users in the general population has not translated into decreases in the overall quantities consumed and related harms, which is indicated by the higher quantities of methamphetamine detected in wastewater and other harm-related indicators. This discrepancy suggests that fewer people consume methamphetamine but those who do so consume it more often and in a more harmful way, or that an increased number of people outside of the sampling frame of the household survey in Australia use methamphetamine. This conclusion is supported by the increase in the share of methamphetamine in crystalline form, which is associated with a higher frequency of use, on the drug market.[122]

In addition, in Australia, admissions into treatment for methamphetamine use disorders have been on the rise since 2010,[123, 124, 125, 126] methamphetamine-related mortality has increased fourfold in the past 20 years[127] and analysis of municipal wastewater detected record levels of methamphetamine in 2019 and early 2020.

Drug supply and use in Australia and New Zealand have seen some changes during the COVID-19 pandemic. In New Zealand, wastewater analysis shows a clear drop in the total quantity of methamphetamine consumed during times of lockdown[128], although a gradual decrease had already begun at the beginning of 2019.

In Australia, several scientific studies have documented declines in the use of methamphetamine and stimulants during the pandemic, in terms of both frequency and quantity used, some ascribing these changes to decreased availability.[129, 130] Municipal wastewater analysis has also shown a delayed but significant decrease in total consumption of methamphetamine (of more than 50 per cent in Western Australia),[131] with some market recovery following the first lockdown.[132]

FIG. 53 **Amphetamine and methamphetamine use in the past year among the general population and methamphetamine use in the past six months among regular stimulants users, Australia, 2001–2021**



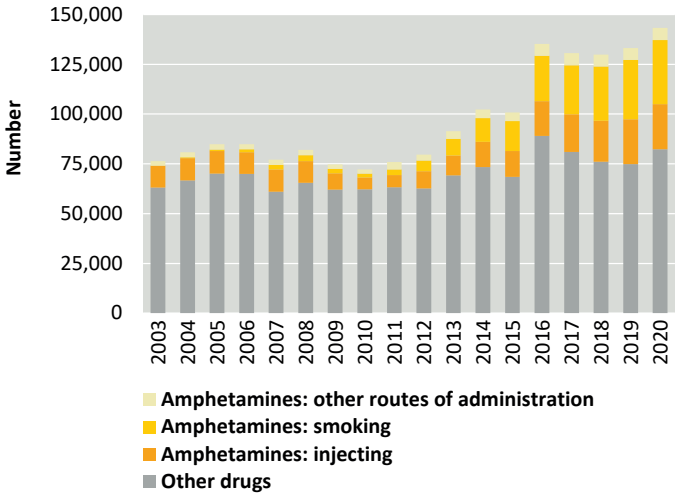
Sources: Australia, Australian Institute on Health and Welfare, National Drug Strategy Household Survey 2019; and Sutherland, R. et al., Australian Drug Trends 2021: Key Findings from the National Ecstasy and Related Drug Reporting System (EDRS) Interviews (Sydney, National Drug and Alcohol Research Centre, 2021).

Amphetamine: regional overview

Diverse amphetamine products and patterns of use in diverse subregions

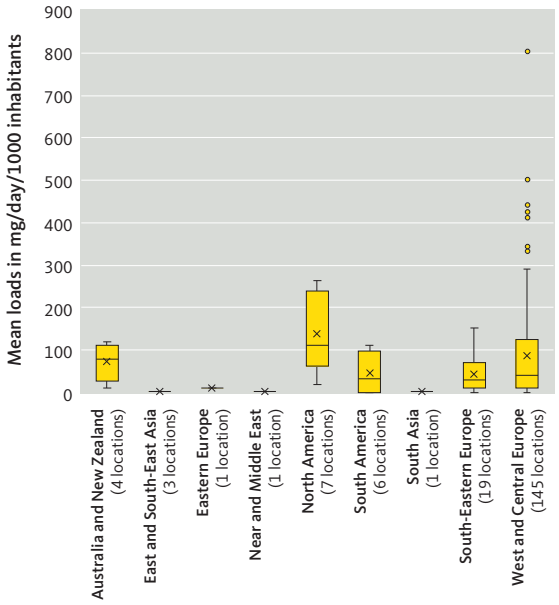
Amphetamine use has traditionally been concentrated in Western and Central Europe[133] and in the Near and Middle East in the form of "captagon", while the non-medical use of pharmaceutical products containing ATS has been the main form of amphetamine misuse in the Americas. Other subregions with available data on the content of drug metabolites in

FIG. 54 Drug treatment episodes, by principal drug of concern, Australia, 2003–2020



Sources: McKetin et al., "Trends in treatment episodes for methamphetamine smoking and injecting in Australia, 2003–2019", *Drug and Alcohol Review*, vol. 40, No. 7 (November 2021); and Australian Institute of Health and Welfare, 'Alcohol, Tobacco & Other Drugs in Australia', Australian Institute of Health and Welfare, April 2022, https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/about.

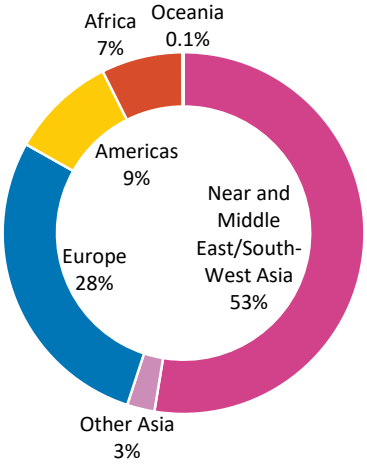
FIG. 55 Variability in mean loads of amphetamine per 1,000 inhabitants in selected cities with available data, by subregion, 2015–2021



Source: UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe and on scientific literature.

Note: Average quantity of amphetamine found in wastewater in 187 locations. Comparability between SCORE group estimates and published estimates may not be complete. Population-normalised loads are the amounts of the target drug residue (in this case amphetamine) entering the wastewater treatment plant, divided by the population served by the wastewater treatment plant, which shows the amount of a substance consumed per day per 1,000 inhabitants.
Small circles represent outliers (locations with higher mean loads than 1.5 times the interquartile range of values for a given subregion. Statistical outliers may be related to the dumping of waste from local manufacture.

FIG. 56 Distribution of global quantities of amphetamine seized, 2016–2020



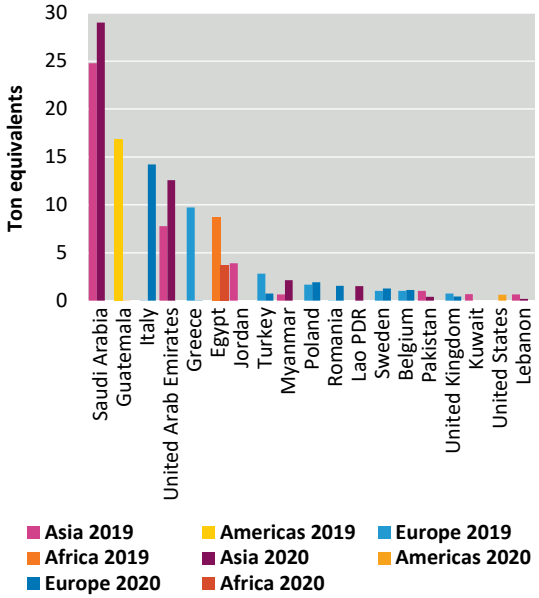
Source: UNODC, responses to the annual report questionnaire.

municipal wastewater have also shown elevated levels of amphetamine, for example Australia and New Zealand and South-Eastern Europe.

Amphetamine use and trafficking are dominated by Europe and the Near and Middle East

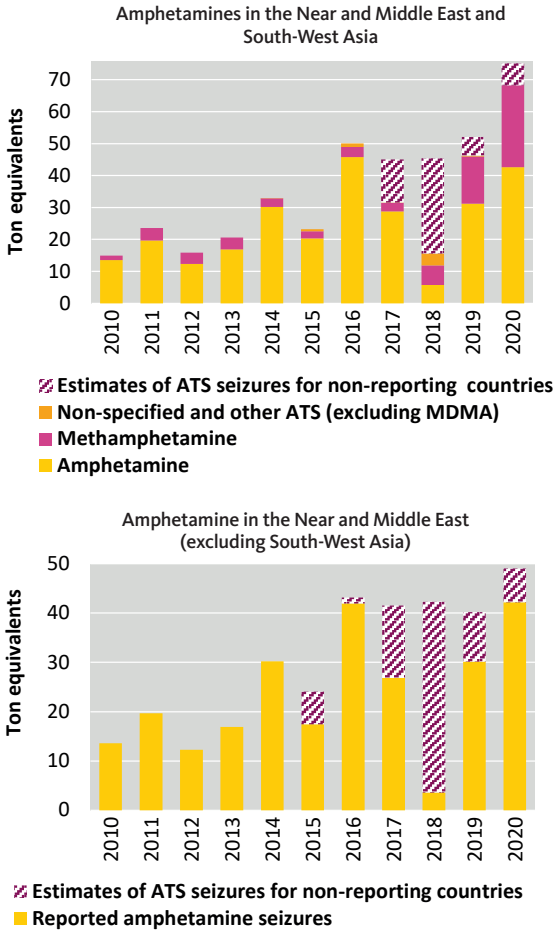
Most amphetamine seized in the period 2016–2020 was seized in the Near and Middle East (where it mostly took the form of counterfeit "captagon" tablets) followed by Europe, with those two regions together

FIG. 57 Countries reporting the largest seizures of amphetamine, 2019 and 2020



Source: UNODC, responses to the annual report questionnaire.

FIG. 58 Seizures of amphetamines in the Near and Middle East and South-West Asia and of amphetamine in the Near and Middle East, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

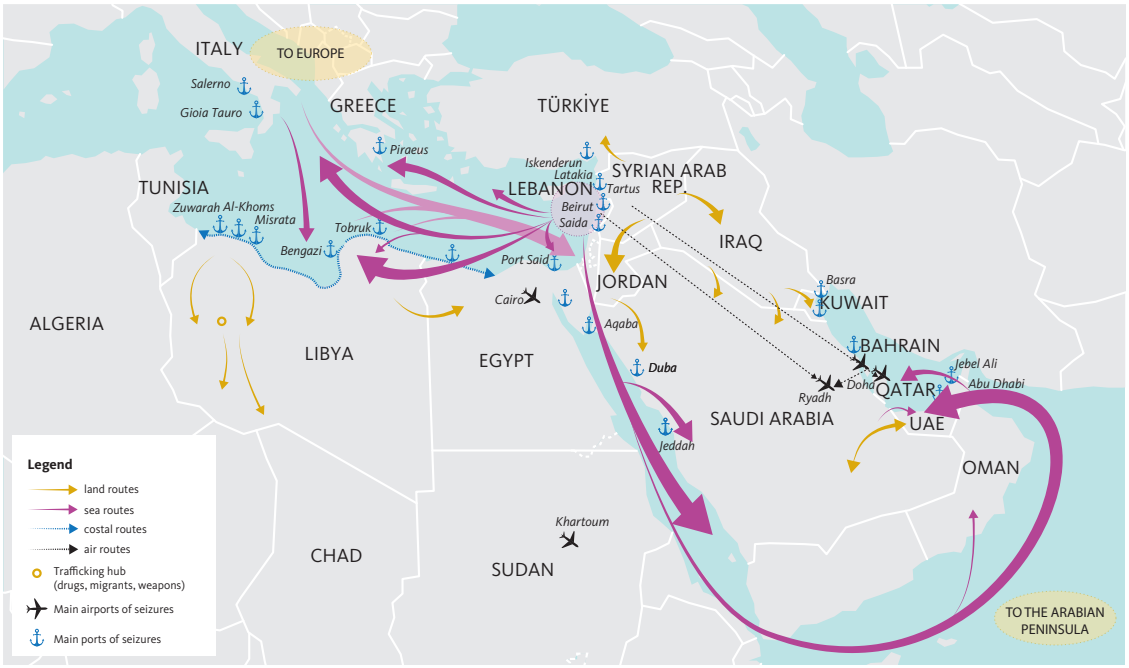
accounting for 80 per cent of all amphetamine seized worldwide during that period.

Near and Middle East: trends in amphetamine markets

Trafficking of "captagon" in the Near and Middle East and North Africa

Across the Near and Middle East, and to some extent in North Africa, amphetamine is sold in tablets under the street name "captagon". "Captagon" was a medicine containing fenethylline, which was legally manufactured starting in the 1960s and was used in the treatment of attention deficit/hyperactivity disorder, depression and narcolepsy, before being withdrawn from the market in the 1980s owing to its side effects.[134] Fenethylline was subsequently put under international control and its production was banned. Tablets sold on the illicit market as "captagon" today generally do not contain fenethylline but various concentrations of illicitly manufactured amphetamine combined with caffeine and other adulterants.[135] In a recent study (October 2021), "captagon" tablets seized in Saudi Arabia were analysed and found to have an amphetamine content of 16 to 41 per cent, along with significant levels of additives such as caffeine, lidocaine, diphenhydramine and 8-chlorotheophylline.[136] Use of this drug has been reported in the Syrian Arab Republic, Lebanon and countries of the Arabian Peninsula, in particular Saudi Arabia.[137, 138]

MAP 16 Main trafficking routes of "captagon" in the Middle East and North Africa, 2016–2021



Sources: UNODC, based on a number of sources, including the following: UNODC, responses to the annual report questionnaire; UNODC, Drugs Monitoring Platform; UNODC technical report on trafficking of drugs in Iraq (forthcoming); and the Global Initiative against Transnational Organized Crime.

The boundaries and names shown and the designations used on this map do not imply ocial endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

While seizures of methamphetamine continued to show the largest increases in the Near and Middle East and South-West Asia, amphetamine once again accounted for the bulk of ATS seizures in 2020, with record quantities seized. Of the seizures of amphetamine reported in those subregions, 99 per cent were of "captagon" tablets.

The largest annual "captagon" seizures in 2020 were those reported by Saudi Arabia, followed by the United Arab Emirates and other countries along the main "captagon" trafficking route from the Levant (i.e. from the Syrian Arab Republic and Lebanon, which continue to be the two countries reported by other countries as the source of seized amphetamine) to Saudi Arabia, the United Arab Emirates and other Gulf countries, either directly via Jordan or by sea, or via destinations in Europe (mainly Greece and Italy), as well as to destinations in North Africa. Some of the large seizures of "captagon" made in Europe in recent years suggest that it is no longer produced only in small, mobile laboratories but that industrial-size clandestine facilities may be involved.[139] Seizures are not confined to the main trafficking routes, as a large seizure of 16 tons of "captagon" was reported in Malaysia in April 2021 and another of 74 kg was reported in Nigeria in September 2021.[140]

The fragile security situation in the Syrian Arab Republic has created a fertile environment for "captagon" production, which is becoming increasingly important to the illicit economy.[141] There have been reports of the smuggling of "captagon" tablets together with arms and ammunition in the region. In one such incident at the border crossing at Nasib between the Syrian Arab Republic and Jordan, Jordanian armed forces ambushed

a group of smugglers in February 2022, seizing 9 million "captagon" tablets and assorted weapons.[142] There have also been reports that in addition to the traditional distribution channels, various darknet markets have served to distribute "captagon" manufactured on the territory of the Syrian Arab Republic.[143]

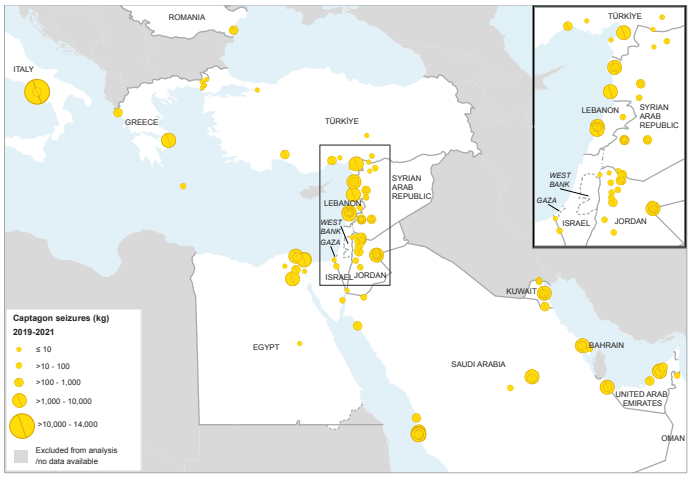
The price of high-quality "captagon" is reported typically to range from $3 to $7 per tablet in the Syrian Arab Republic, Lebanon and Iraq, but can run up to $25 per tablet in consumer markets such as Saudi Arabia, although the price of a tablet in the Syrian Arab Republic may be as low as $1 for students or soldiers who serve as distributors. Prices close to manufacturing sites can be even lower ($0.50), although tablets at such low prices are often discoloured and usually of a lower quality. Tablets destined for export are usually white and of higher quality.[144]

In the Near and Middle East and North Africa "captagon" is among the most used drugs in the region

Exact estimates of the prevalence of "captagon" use among the population and its trend cannot be constructed owing to data gaps, but qualitative assessments by national experts suggest that, for some countries, "captagon" is the most, or is among the most, prevalent and harmful drugs. Saudi Arabia has reported ATS as the most used group of drugs and that its use may have spread in the country and the most commonly occurring group of primary drugs in treatment. In the United Arab Emirates, ATS were reported as the second most used drug group and pharmaceutical products containing ATS were reported as the most commonly used drug. In Qatar, amphetamines were reported as the second most commonly used drug after cannabis, while Iraq also reported a large increase in the use of methamphetamine and "captagon" across all age groups and both men and women.

While verifiable data are difficult to find, several reports indicate that "captagon" consumption rates in the Syrian Arab Republic among the key demographic groups of students, youth, internally displaced citizens and refugees have risen since the beginning of the conflict.[145] A 2020 cross-sectional survey conducted in two main civil prison systems in Damascus and Dar'a suggested that "captagon" was the second-most popular substance among incarcerated persons after cannabis resin.[146]

MAP 17 Significant seizures of "captagon" tablets in the Near and Middle East and neighbouring regions, 2019–2021



Source: UNODC, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply ocial endorsement or acceptance by the United Nations.

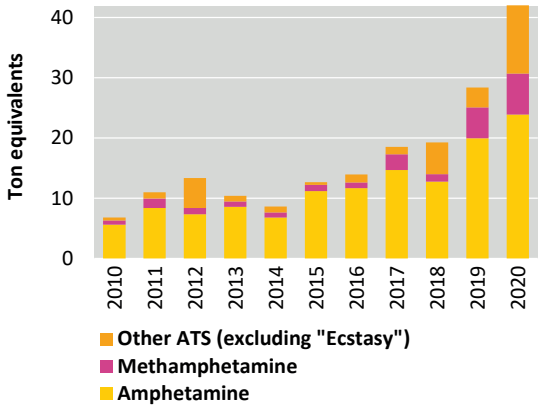
Europe: trends in amphetamine markets

Seizures of amphetamine continued to dominate ATS seizures in Europe

In every year of the past decade, amphetamine was the most seized ATS in Europe, clearly ahead of methamphetamine. Over the period 2016–2020, seizures of amphetamine accounted for 68 per cent of all amphetamines seized in Europe, methamphetamine for 14 per cent and other ATS for 18 per cent.

The largest amphetamine seizures in Europe over that period were reported in Western and Central Europe (70 per cent), followed by South-Eastern Europe (27 per cent) and Eastern Europe (2 per cent). Turkey reported seizing the largest quantities of amphetamine in Europe (23 per cent of the total), followed by Italy (17 per cent) and Greece (13 per cent). These three countries reported several seizures involving "captagon" tablets, mainly related to transit shipments

FIG. 59 Seizures of amphetamines in Europe, 2010–2020



Source: UNODC, responses to the annual report questionnaire.

between locations in the Near and Middle East via Europe.

Most individual European countries reported that amphetamine seizures exceeded methamphetamine seizures each year, with Czechia and Slovakia being the only regular exceptions. Some other countries reported methamphetamine seizures exceeding amphetamine seizures in isolated years only.

Seizures of other ATS rose sharply in Europe in 2020, from 0.5 tons in 2010 and 3.3 tons in 2019 to more than 11.6 tons in 2020. That includes in 2020 primarily seizures of various internationally controlled cathinones (close to 11.6 tons), as well as, to a lesser extent, seizures of pharmaceutical ATS (such as methylphenidate) and of non-specified ATS.

Amphetamine use continued to predominate despite signs of increase in methamphetamine use in some countries in Europe

The estimated prevalence of past-year use of amphetamines in Europe in 2020 was 0.5 per cent of the population aged 15–64, corresponding to 2.9 million users. Past-year use was higher in Western and Central Europe, estimated at 0.7 per cent, or 2.3 million users, while the prevalence in Eastern and South-Eastern Europe was 0.25 per cent, representing nearly 600,000 users.

Amphetamine is the second most used stimulant drug in Europe after cocaine[147]. Its use continues to be more prevalent than methamphetamine use in Europe, but recent trends point to an increase in methamphetamine use in some parts of the region.[148] Until recently, only Czechia, Latvia, Slovakia, Switzerland, Turkey, and some parts of Germany in the east were reporting a higher use of methamphetamine on the basis of multiple data sources.[149] By contrast, in Norway, where the use of methamphetamine used to dominate, amphetamine use is now replacing it on the drug market, as suggested by seizures, analysis of used syringes,[150] and wastewater data.[151] A recent online survey on drugs, conducted mainly in Western and Central Europe and in some countries in South Eastern Europe,[152] confirms that more people use amphetamine than methamphetamine (28 per cent versus 9 per cent in 22 countries of Western and Central Europe; 20 per cent versus 8 per cent in 4 countries of South-Eastern Europe,[i] as well as Kosovo[j]).

The level of use of amphetamines[k] in Western and Central Europe is stable overall.[153] However, there are countries in the subregion in which the prevalence of the use of amphetamines is above 1 per cent of the population aged 15–64 and where increases have been observed over the past 5 to 10 years, for example, Croatia, Finland, Germany, and the Netherlands.

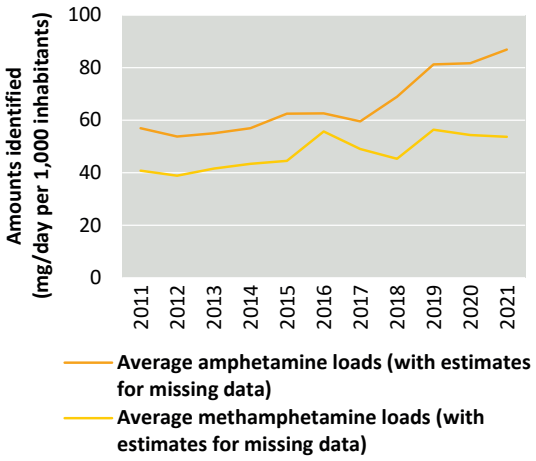
According to data on people in drug treatment in the European Union, Norway and Turkey, amphetamine is mostly consumed intranasally (by 65 per cent of people in treatment), with others consuming the substance orally (16 per cent) or injecting it (11 per cent).[154] Methamphetamine users also most often consume the substance intranasally (42 per cent), and almost a third of users of the substance inject it (29 per cent).[155]

i Albania, Montenegro, North Macedonia and Serbia.

j References to Kosovo shall be understood to be in the context of Security Council resolution 1244 (1999).

k Amphetamines is a term incorporating both, amphetamine and methamphetamine.

FIG. 60 Quantities of amphetamine and methamphetamine metabolites found in wastewater, 79 cities in Europe, 2011–2021



Source: UNODC calculations based on wastewater data provided by Sewage Analysis CORe group Europe.

Note: Average quantity of amphetamine/methamphetamine found in wastewater in 79 cities in 24 countries. Including estimates for missing data based on an assumption of gradual increase/decrease in years in which no analysis took place in a city and no change since latest available data. For amphetamine, statistical outliers that are likely related to the dumping of waste from local amphetamine manufacture have been excluded from the data analysis. The present figure is not directly comparable with that published previously due to differences in geographical scope and calculation methods.

In the Russian Federation, the population rate of users treated for the first time for drug use disorders attributed to amphetamines has remained stable, after increasing between 2009 and 2015.[l]

The level of consumption of amphetamine and methamphetamine may have changed in some locations in Western and Central Europe during the COVID-19 pandemic, but the direction of the trend is not yet clear, with some data suggesting a decrease. Among approximately 50,000 participants of an online non-representative survey among drug users, more respondents perceived a decrease than an increase in the use of both amphetamine and methamphetamine during the pandemic.[156]

l See also booklet 3 of the present report entitled "*Opioids*".

Global supply and demand of "ecstasy"

Upward trend in dismantled laboratories and shift away from kitchen laboratories

Fifty-nine "ecstasy" manufacturing laboratories were reported to have been dismantled worldwide in both 2019 and 2020. Over the past decade, the number of "ecstasy" laboratories reported to have been dismantled fluctuated greatly, but with an overall upward trend, rising from an average of 41 dismantled laboratories per year over the period 2010–2015 to an average of 58 per year in the period 2016–2020.

Data show that the proportion of kitchen laboratories used in the manufacture of "ecstasy" clearly declined, as they constituted 44 per cent of dismantled laboratories in the period 2010–2015 but only 12 per cent in the period 2016–2020, while the proportions of small-scale and medium-scale "ecstasy" manufacturing sites increased from 18 to 37 per cent and from 29 to 47 per cent, respectively. However, the proportion of industrial-scale "ecstasy" laboratories dismantled fell from 9 to 5 per cent.

The number of countries reporting the dismantling of "ecstasy" laboratories has remained stable at around 20 countries. Most laboratories dismantled in the period 2016–2020 were in Europe (54 per cent), followed by Oceania (23 per cent), Asia (13 per cent) and the Americas (9 per cent).

Choice of precursors shifting towards non-controlled chemicals

Seizures of "ecstasy" precursors continue to fluctuate but tend to exhibit a decreasing trend.[157] Seizure data indicate that traffickers are continuing to use different MDMA precursors. Originally, MDMA was manufactured almost exclusively from 3,4-MDP-2-P before several precursors of 3,4-MDP-2-P were used instead as starting materials, notably piperonal, safrole and isosafrole.

The initially non-controlled substances 3,4-MDP-2-P methyl glycidate and 3,4-MDP-2-P methyl glycidic acid (typically originating in China according to INCB)[158] were also important chemicals in the manufacture of

What is "ecstasy"?

The term "ecstasy" was originally used exclusively to describe tablets containing 3,4-methylenedioxymethamphetamine, also known as MDMA. However, an increasing number of different substances or products marketed as "ecstasy" have appeared on the market over the past two decades.[i] In some instances, they may also contain MDMA or other related substances, such as MDA and MDEA. The actual content of what is sold as "ecstasy" may not be known to the user.

From the mid- to late 2000s, declining availability of and the improved controls placed on the precursors used to manufacture MDMA led to tablets sold as "ecstasy" containing ever-decreasing quantities of MDMA and increased adulteration and/or substitution with other psychoactive substances.[ii] While these diverse "ecstasy" products have persisted in different markets, since 2010/11, "ecstasy" products with high MDMA content have gradually re-emerged. This is especially true in the European Union,[iii] where half of the countries reported an average MDMA content in "ecstasy" tablets of 161 to 193 mg in 2019,[iv] up from the 50–80 mg of MDMA reported in the 1990s and 2000s.[v]

Forms of "ecstasy" have also diversified, from the clear predominance of tablets before 2010 to powder and crystal forms,[v] sold either loose or in capsules.[vi] MDMA in crystal form seems less likely to be adulterated.[vii, viii] While there exist concerns about possible health harms from certain adulterants (especially toxic PMMA), high doses of MDMA are also a concern, in particular when used by inexperienced users.[viii]

i See also *World Drug Report 2017*, Booklet 4, Market Analysis of Synthetic Drugs: Amphetamine-type Stimulants, New Psychoactive Substances (United Nations publication, 2017).

ii Jane Mounteney et al., 'Nine Reasons Why Ecstasy Is Not Quite What It Used to Be', *International Journal of Drug Policy* 51 (January 2018): 36–41.

iii For the following calculations data from European Union countries plus Norway and Turkey were used.

iv EMCDDA, *European Drug Report 2021: Trends and Developments* (Luxembourg: Publications Office of the European Union, 2021).

v UNODC, *World Drug Report 2021*, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants.

vi EMCDDA, *Recent Changes in Europe's MDMA/Ecstasy Market: Results from an EMCDDA Trendspotter Study, April 2016.* (LU: Publications Office, 2016).

vii Claudio Vidal Giné et al., 'Crystals and Tablets in the Spanish Ecstasy Market 2000–2014: Are They the Same or Different in Terms of Purity and Adulteration?', *Forensic Science International* 263 (June 2016): 164–68.

viii EMCDDA, *Recent Changes in Europe's MDMA/Ecstasy Market: Results from an EMCDDA Trendspotter Study, April 2016.* (LU: Publications Office, 2016).

MDMA, with large quantities seized in 2017 and 2018, prior to their international scheduling in 2019.[159] Although seizures of these substances continue to decline, they still accounted for around 45 per cent of all "ecstasy" precursors seized (expressed in MDMA equivalents) in 2020, ahead of seizures of 3,4-MDP-2-P (37 per cent) and safrole (18 per cent).[160] There are, however, no indications of diversion of legally manufactured 3,4-MDP-2-P. All reported seizures in recent years have been made in laboratories using 3,4-MDP-2-P that had been manufactured illicitly from other starting materials (both internationally controlled and non-controlled substances).[161]

In addition, new non-scheduled substances used in the manufacture of MDMA continue to emerge, such as methyl 3-oxo-2-(3,4-methylenedioxyphenyl)butanoate, also known as MAMDPA. Seizures of that substance have been reported in the Netherlands, allegedly originating in Hong Kong, China.[162]

Piperonal remains one of the six precursor chemicals of MDMA under international control. It is widely traded on licit market. Nonetheless, diversion cases, nowadays, are rare and piperonal seems to have declined significantly in importance as a precursor for the clandestine manufacture of "ecstasy".[163, 164]

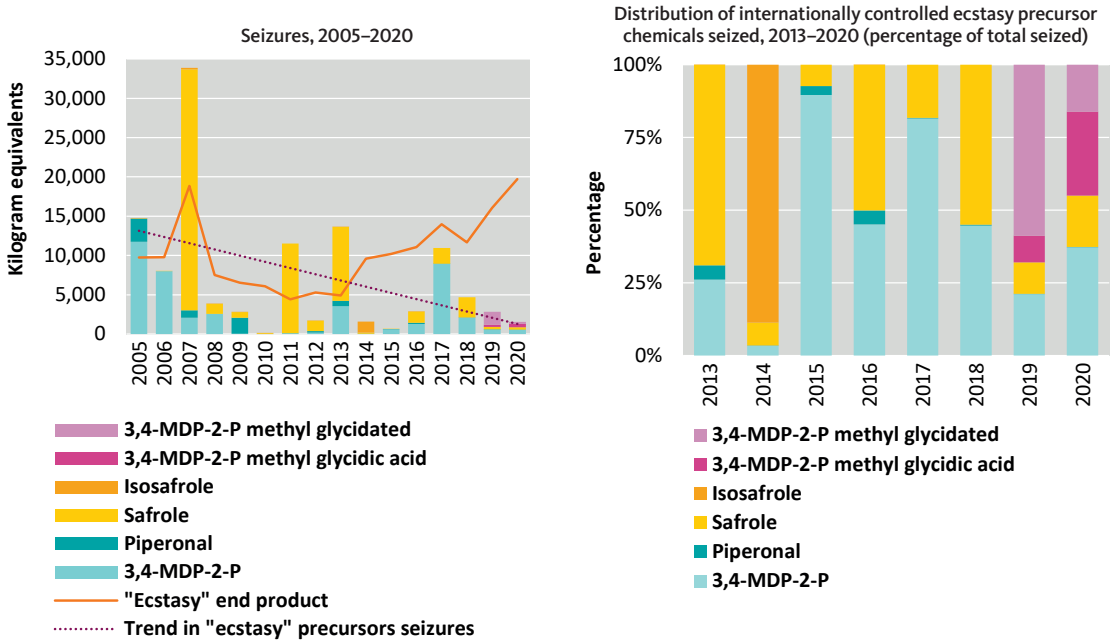
Seizures and trafficking of "ecstasy" continued to increase in 2020

Despite falling demand for "ecstasy" in 2020, seizures continued to increase at the global level during that year, surpassing the previous record level of 2007. Increased seizures were driven by those in the Americas and Asia, with a small decline in seizures reported in Western and Central Europe.

Despite the overall increase in the quantity of "ecstasy" seized, more countries reported declines in quantities of "ecstasy" seized (53 countries) than those reporting increases year on year in 2020 (44 countries).[m] If only seizures which were explicitly reported as "ecstasy" seizures are considered in both 2019 and 2020, data show that there were 43 countries reporting declines

m This includes cases in which seizures were reported in 2020 but none in 2019 and vice versa.

FIG. 61 Seizures of "ecstasy" and of internationally controlled "ecstasy" precursors in kilograms of MDMA equivalents, 2005–2020, and as a percentage of total seizures, 2013–2020



Sources: INCB, Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances (E/INCB/2021/4), and previous years.

Note: the following conversion factors– as reported by INCB – were used to convert the MDMA precursor seizures into MDMA equivalents: 3,4-MDP-2-P: 1.1; piperonal: 2.1; safrole and isosafrole: 1.5; 3,4-MDP-2-P methyl glycidic acid and 3,4-MDP-2-P methyl glycidate: 2.1

and only 26 countries reporting increases in "ecstasy" seizures in 2020.

The main countries of origin and/or of departure of "ecstasy" in the period 2016–2020 were in Europe, which accounted for 81 per cent of all mentions worldwide. This means that trafficking in "ecstasy" is not only intraregional (as is the case in Europe) but, in contrast to other ATS, also continues to be mainly interregional for all regions other than Europe.

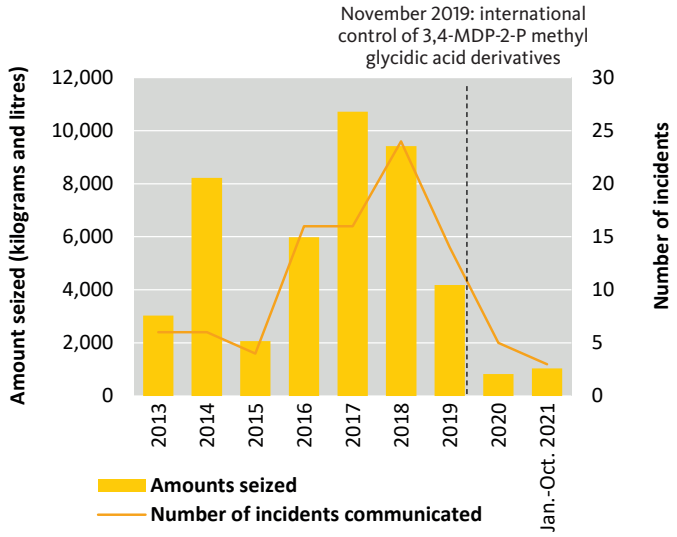
"Ecstasy": the drug the use of which was likely the most affected by the COVID-19 pandemic

In 2020, an estimated 0.4 per cent of the global population aged 15–64, or 20 million people, had used "ecstasy" in the past year.

The epicentre of production of "ecstasy"-type substances appears to have remained in Western Europe, while use of the drug continues to spread geographically, with the subregions of Australia and New Zealand, Western and Central Europe, and North America all exhibiting a higher-than-average prevalence of past-year use. Consumption of MDMA per capita also appears to be elevated in South-Eastern Europe, as compared with other regions, according to wastewater monitoring data.

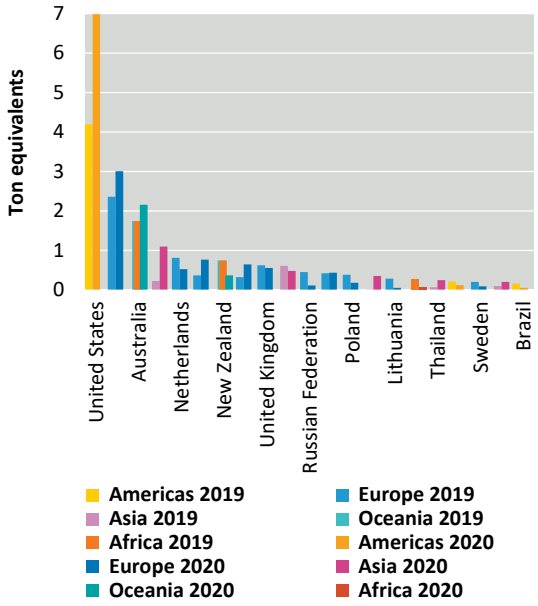
Asia is likely home to the highest number of users (estimated at over 10 million), despite the prevalence of "ecstasy" use among the general population of the region being below the global average (at 0.3 per cent). The prevalence of use in the past year in Africa is estimated at a similar level in percentage terms, corresponding to almost 2 million users.

FIG. 62 Incidents involving 3,4-MDP-2-P methyl glycidic acid derivatives communicated through the Precursors Incident Communication System, 2013–2021



Sources: INCB, Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances (E/INCB/2021/4).

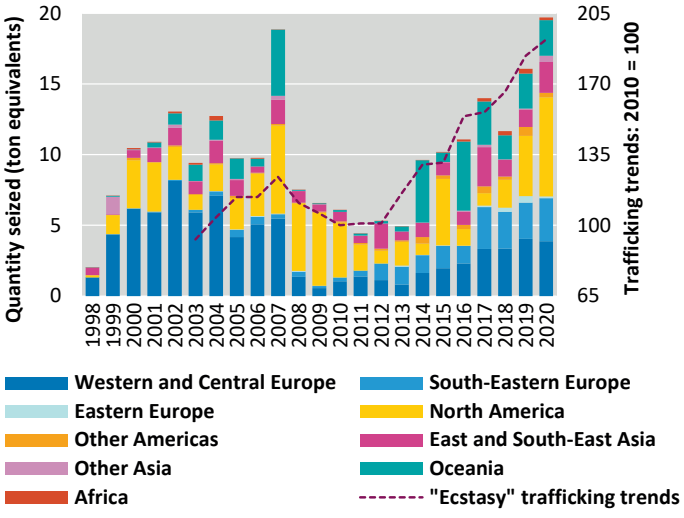
FIG. 63 Countries reporting the largest seizures of "ecstasy", 2019 and 2020



Source: UNODC, responses to the annual report questionnaire.

Note: Data shown for the United Kingdom for 2019 refer to data for England and Wales for the fiscal year 2019/20 and 2019 data for Scotland and Northern Ireland, while data for 2020 refer to data from England and Wales for the fiscal year 2019/20.

FIG. 64 Quantities of "ecstasy" seized, by region, and reported qualitative trends in "ecstasy" trafficking, 1998–2020

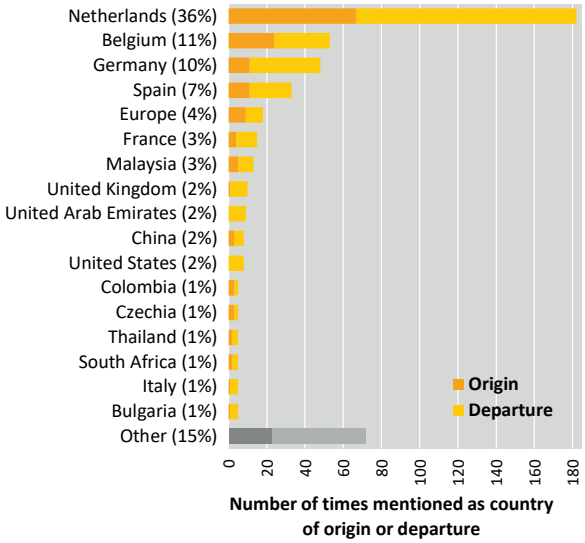


Source: UNODC, responses to the annual report questionnaire.

The self-reported annual prevalence of "ecstasy" use in the Americas is above the global average, at 0.6 per cent, corresponding to 3.8 million users. These users are concentrated in North America (2.9 million users), where the past-year prevalence of reported "ecstasy" use stands at 0.9 per cent. This figure has remained stable in the United States and Canada in recent years. In Central and South America and the Caribbean, the past-year prevalence of use is about 0.2 per cent.

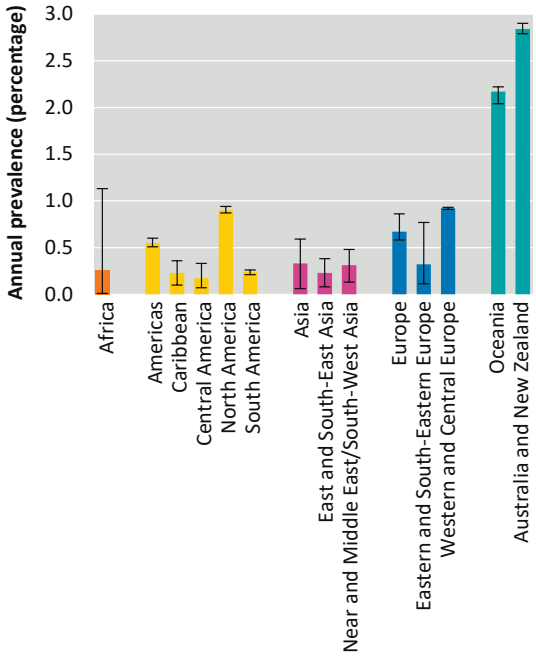
The use of "ecstasy" has traditionally been concentrated among young people in nightlife settings[165, 166, 167] and has shifted from use among certain subcultures to more mainstream use over the last decade.[168] This pattern has likely contributed to the observed decreases in the use of MDMA ("ecstasy") as a likely consequence of measures in response to the COVID-19 pandemic, such as stay-at-home orders, the closure

FIG. 65 Main countries of origin and departure of "ecstasy", 2016–2020



Source: UNODC, responses to the annual report questionnaire.

FIG. 66 Use of "ecstasy", by region and subregion, 2020



Source: UNODC estimates based on responses to the annual report questionnaire.

Notes: Data are not shown for subregions where recent estimates (from the past 10 years) were not available from countries and thus subregional estimates could not be computed. For 2020, the estimated global number of "ecstasy" users and prevalence of "ecstasy" use are based on estimates from 83 countries, covering 34 per cent of the world population. Of those, new data points were reported for 15 countries in 2021.

of recreational venues and the cancellation of large music events. Decreases were self-reported by users in surveys and "ecstasy" was the drug most often associated with a decrease in use.[169, 170, 171] This was also evident from wastewater analysis.[172]

"Ecstasy": regional overview

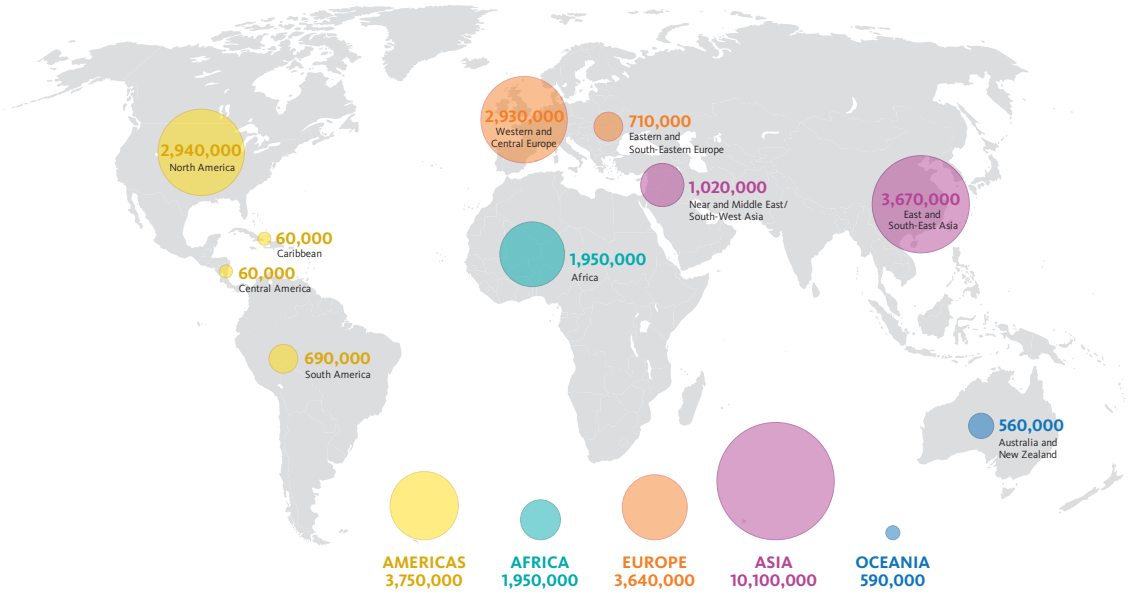
Europe: trends in "ecstasy" markets

Stable "ecstasy" use, with increases in some countries, over the past decade in Europe

In addition to being a hub for global MDMA manufacture, Europe is also a major consumer market for the substance. An estimated 0.7 per cent of the European population aged 15–64, or 3.6 million people, had used "ecstasy"-type substances in the past year in 2020. The prevalence of "ecstasy" use is higher in Western and Central Europe, with 0.9 per cent of the population aged 15-64, or more than 2.9 million people, using the drug in the past year. In Eastern and South-Eastern Europe, the prevalence is relatively lower, at 0.3 per cent of the population aged 15–64, or approximately 700,000 users, according to household surveys' results. However, contrary to this, wastewater analysis data suggest that "ecstasy" consumption may also be elevated in South-Eastern Europe.

The use of "ecstasy" is more concentrated among young people[173] than the use of other drugs, with more than three quarters of past-year users of "ecstasy" in the European Union between the ages of 15 and 34.[174] In the European Union, Norway and Turkey, the prevalence of use was 1.9 per cent in this age group.[175] A study among almost 100,000 high school students in 35 European countries estimated that 2.3 per cent of the population aged 15–16 had used "ecstasy" at least

MAP 18 Number of "ecstasy" users, by region and subregion, 2020



Source: UNODC, responses to the annual report questionnaire.

once,[176] making it the second most used drug, after cannabis, among this age group.

The number of requests for treatment associated with "ecstasy" use have traditionally been low. Only about 0.4 per cent of all people requesting such treatment in Western and Central Europe had used "ecstasy" as their primary drug.[177] However, acute toxicity connected with the drug is not rare and MDMA was reported as the sixth most frequently occurring drug among all presentations (9.5 per cent) in hospitals participating in the European Drug Emergencies Network (Euro-DEN) surveillance project in 2019.[178]

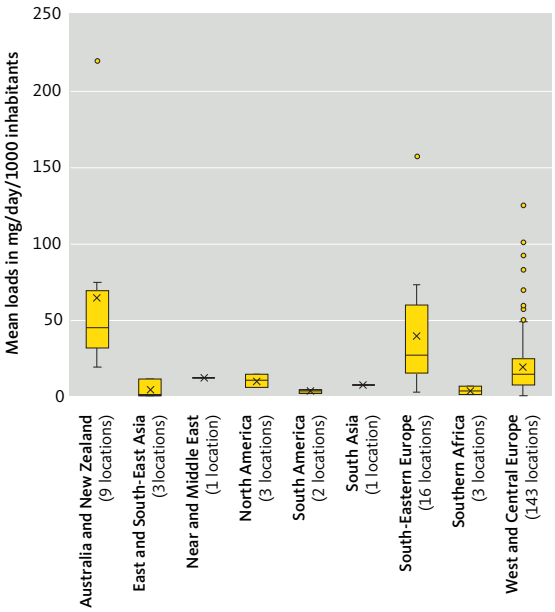
The concentration of MDMA (in terms of milligrams) in "ecstasy" tablets grew by 149 per cent in the European Union between 2009 and 2019,[179, 180] while adulterants have continued to pose increasing risks to users.[181, 182]

Most countries in Western and Central Europe for which data are available have seen relatively stable long-term trends with regard to the prevalence of the use of "ecstasy"-type substances, although Belgium, Croatia, Germany, Ireland, and the Netherlands have all witnessed a clear increase in such use in the past 10 years.[183]

During lockdown periods resulting from the COVID-19 pandemic, "ecstasy" use saw a clear overall decrease in Western and Central Europe[184] and South-Eastern Europe,[185] as reported by people who use drugs and reflected in analysis of municipal wastewater, with more cities recording a decrease in MDMA (24 cities) than an increase (18 cities) in 2020.[186] Early wastewater analysis data from 2021 suggest a continuing decline of the levels of MDMA identified in municipal wastewaters in 79 European cities.

The trend in detected levels of MDMA in municipal wastewater between 2011 and 2019 is clearly upward. However, it is not clear to what extent the trend is determined by increasing purities of "ecstasy"-type substances on the illicit market or to what extent the increase in the number of users in some cities and countries participating in wastewater monitoring plays a role.

FIG. 67 Mean loads of MDMA per 1,000 inhabitants in selected cities with available data, by subregion, 2015–2021



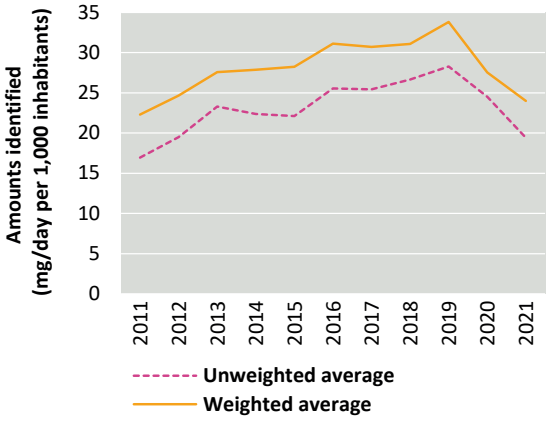
Source: UNODC calculations based on wastewater data provided by the Sewage Analysis CORe group Europe and scientific literature.[187]

Note: Average quantity of MDMA found in wastewater in 183 locations. Comparability between SCORE group estimates and published estimates may not be complete. Population-normalised loads are the amounts of the target drug residue (in this case MDMA) entering the wastewater treatment plant, divided by the population served by the wastewater treatment plant, which shows the amount of a substance consumed per day per 1000 inhabitants.

Small circles represent outliers (locations with higher mean loads than 1.5 times the interquartile range of values for a given subregion. Statistical outliers may be related to the dumping of waste from local manufacture.

Two outliers are not shown on the figure despite available measurements, due to possible distortion of the perspective: one city in East and South-East Asia with a value of 718.67 and one location in South-Eastern Europe with a value of 632.

FIG. 68 Quantities of MDMA found in wastewater, 79 cities in Europe, 2011–2021



Source: UNODC calculations based on wastewater data provided by Sewage Analysis Core Group Europe (SCORE).

Note: Average quantity of MDMA found in wastewater in 79 cities in 24 countries, weighted by the population of the sites; assumption of gradual increase/decrease in years in which no analysis was conducted in a city and there was no change recorded in the latest available data. Including estimates for missing data. The present figure is not directly comparable with that published previously due to differences in geographical scope and calculation methods.

Oceania: trends in "ecstasy" markets

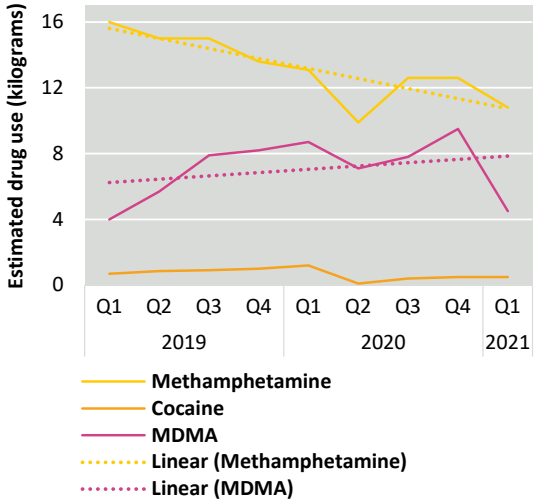
Mid-term increases in "ecstasy" use paused in 2020 in Oceania

Oceania has a relatively high prevalence of past-year use of "ecstasy", estimated in 2020 at 2.2 per cent of population aged 15–64. The estimate is even higher for the subregion of Australia and New Zealand, where the prevalence is 2.8 per cent, corresponding roughly to 560,000 users.

In 2019, the prevalence of past-year "ecstasy" use in Australia was 3 per cent among the population aged 14 and above, an increase from the previous estimate dating back to 2016, but at the same level as in 2010.[188]

Similar to other regions, the "ecstasy" market in Oceania has diversified in the last decade, especially since 2014.[189] The traditional predominance of "ecstasy" pills or tablets was overtaken by capsules in 2019, when teenagers and young adults in their 20s were more likely to use capsules and people aged 30 or older were more likely to use tablets.[190] The use of MDMA in crystalline form is also increasingly common, overtaking the use of the tablet form in 2021.[191] The predominance of MDMA capsules on the "ecstasy" market was also suggested by a forensic study of MDMA seizures at music festivals in New South Wales in late 2019 and early 2020, where capsules constituted 83 per cent of all forms of MDMA seized. The seized substances did not contain dangerous adulterants in any relevant concentration.[192]

FIG. 69 **Quarterly averages of total weekly consumption of MDMA, methamphetamine and cocaine in New Zealand, 2019– first quarter of 2021**



Source: New Zealand Police, "Wastewater drug testing in New Zealand: national overview – quarter one, 2021".

Note: In New Zealand, there are 46 testing sites nationwide, covering approximately 75 per cent of the population.

The past-year prevalence of "ecstasy" use in New Zealand was estimated at 2 per cent in 2013. No recent survey data is available, but data from regular wastewater monitoring suggest an overall upward trend in MDMA concentrations since the beginning of 2019, with a decrease observed during the COVID-19-related lockdown in the second quarter of 2020. A larger drop was subsequently observed in early 2021. New Zealand has reported a significant decrease in seizures of MDMA registered by customs authorities since October 2020 and has interpreted this as being a result of supply-chain complications due to the COVID-19 pandemic.[193] A significant increase was reported in the supply, availability and likely consumption of synthetic cathinones sold as MDMA, primarily eutylone, in 2020. Eutylone was also identified in tablets mixed with varying amounts of MDMA.[194]

Australia also recorded decreases in "ecstasy" use among regular stimulants users in 2020, when 70 per cent of users reported reduced use after restrictions were introduced as a result of the COVID-19 pandemic, and interviewed users reported lessened opportunities for socialization as the most common reason for reduced use.[195] In addition, there were reports of perceived reductions in the purity and availability of MDMA.

References

1 UNODC, responses to the annual report questionnaire, n.d.

2 INCB, 2021 *Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances,* 2020.

3 UNODC, responses to the annual report questionnaire.

4 UNODC, *World Drug Report 2021*, Booklet 4, *Drug Market Trends: Cocaine, Amphetamine-Type Stimulants* (United Nations publication, 2021).

5 INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*.

6 Ibid.

7 UNODC, responses to the annual report questionnaire.

8 EMCDDA and Europol, *EU Drug Markets Report 2019* (Luxembourg: Publications Office of the European Union, 2019).

9 Ibid.

10 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2019–20*, 2021.

11 INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*.

12 Ibid.[[Ibid.]]

13 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2019–20*.

14 INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*.

15 Ibid.

16 Ibid.

17 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

18 INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*.

19 Ibid.

20 Ibid.

21 Ibid.

22 Ibid.

23 UNODC, responses to the annual report questionnaire.

24 United States, Substance Abuse and Mental Health Services Administration, *Results from the 2020 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland: Center for Behavioral Health Statistics and Quality, 2021).

25 UNODC, responses to the annual report questionnaire.

26 Marit Huizer et al., 'Wastewater-Based Epidemiology for Illicit Drugs: A Critical Review on Global Data', *Water Research* 2017 (December 2021): 117789, https://doi.org/10.1016/j.watres.2021.117789.

27 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

28 Linghui Li et al., 'Stereoselectivity in the Human Metabolism of Methamphetamine', *British Journal of Clinical Pharmacology* 69, no. 2 (February 2010): 187–92, https://doi.org/10.1111/j.1365-2125.2009.03576.x.

29 Erik Emke et al., 'Enantiomer Profiling of High Loads of Amphetamine and MDMA in Communal Sewage: A Dutch Perspective', *Science of The Total Environment* 487 (July 2014): 666–72, https://doi.org/10.1016/j.scitotenv.2013.11.043;

30 Jianfa Gao et al., 'Enantiomeric Profiling of Amphetamine and Methamphetamine in Wastewater: A 7-Year Study in Regional and Urban Queensland, Australia', *Science of The Total Environment*, no. 643 (December 2018), https://doi.org/10.1016/j.scitotenv.2018.06.242.

31 Niklas Köke et al., 'Stability of Selected Substances Related to the Clandestine Production of Amphetamine-Type Stimulants in Wastewater: Identification of Transformation Product', *Talanta Open*, no. 5 (August 2022), https://doi.org/10.1016/j.talo.2022.100104.

32 DNC Annual Drug Report Bangladesh, 2020.

33 Emeka W Dumbili and Ikenna D Ebuenyi, 'Factors Influencing Methamphetamine (Mkpulummiri) Use in Eastern Nigeria', 2022, https://doi.org/10.13140/RG.2.2.33242.41926.

34 UNODC, 'Drug Situation in Afghanistan 2021: Latest Findings and Emerging Threats', November 2021.

35 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*, 4.

36 Government of Canada, 'Canadian Alcohol and Drugs Survey (CADS): Summary of Results for 2019', n.d., https://www.canada.ca/en/health-canada/services/canadian-alcohol-drugs-survey/2019-summary.html#a4.

37 UNODC, responses to the annual report questionnaire.

38 United States, Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health (for different years).

39 UNODC, responses to the annual report questionnaire.

40 SAMSHA, Center for Behavioral Health Statistics, and Quality, *Treatment Episode Data Set (TEDS) 2019. Admissions to and Discharges From Publicly Funded Substance Use Treatment* (Rockville, MD: Substance Abuse and Mental Health Services Administration, 2021).

41 Ibid.; Kristi Papamihali et al., 'Crystal Methamphetamine Use in British Columbia, Canada: A Cross-Sectional Study of People Who Access Harm Reduction Services', ed. Vincenzo De Luca, *PLOS ONE* 16, no. 5 (26 May 2021): e0252090, https://doi.org/10.1371/journal.pone.0252090.

42 Erin E. Conners et al., 'Structural Factors Associated with Methamphetamine Smoking among Female Sex Workers in Tijuana, Mexico: Structural Factors Methamphetamine Smoking', *Drug and Alcohol Review* 37 (April 2018): S294–302, https://doi.org/10.1111/dar.12633

43 Meredith C. Meacham et al., 'Perceived Treatment Need and Latent Transitions in Heroin and Methamphetamine Polydrug Use among People Who Inject Drugs in Tijuana, Mexico', Journal of Psychoactive Drugs 50, no. 1 (January 2018): 62–71, https://doi.org/10.1080/02791072.2017.1370747.

44 Oralia Loza, Priscilla Guevara, and Amir Hernandez, 'Gender Differences in Methamphetamine Use Initiation and Trajectory of Use Among People Who Use Methamphetamine in a Mexico-US

Border City', Addictive Disorders & Their Treatment 20, no. 4 (December 2021): 288–302, https://doi.org/10.1097/ADT.0000000000000253.

45 Bill Casey and Standing Committee on Health, *Impacts of Methamphetamine Abuse in Canada. Report of the Standing Committee on Health*, 2019.

46 Sara N. Glick et al., 'Increasing Heroin-Methamphetamine (Goofball) Use and Related Morbidity Among Seattle Area People Who Inject Drugs', *The American Journal on Addictions* 30, no. 2 (March 2021): 183–91, https://doi.org/10.1111/ajad.13115.

47 Papamihali et al., 'Crystal Methamphetamine Use in British Columbia, Canada'.

48 Glick et al., 'Increasing Heroin-Methamphetamine (Goofball) Use and Related Morbidity Among Seattle Area People Who Inject Drugs'.

49 Bill Casey and Standing Committee on Health, *Impacts of Methamphetamine Abuse in Canada. Report of the Standing Committee on Health*, 2019.

50 Ibid.

51 Matthew S. Ellis, Zachary A. Kasper, and Theodore J. Cicero, 'Twin Epidemics: The Surging Rise of Methamphetamine Use in Chronic Opioid Users', *Drug and Alcohol Dependence* 193 (December 2018): 14–20, https://doi.org/10.1016/j.drugalcdep.2018.08.029.

52 Glick et al., 'Increasing Heroin-Methamphetamine (Goofball) Use and Related Morbidity Among Seattle Area People Who Inject Drugs'.

53 United States Department of Justice, Drug Enforcement Administration, *2020 National Drug Threat Assessment* (Washington D.C.: National Drug Intelligence Center, 2021).

54 Bill Casey and Standing Committee on Health, *Impacts of Methamphetamine Abuse in Canada. Report of the Standing Committee on Health*, 2019.

55 Ibid.

56 Canadian Centre on Substance Use and Addiction, *Methamphetamine*, Canadian Drug Summary, 2020.

57 Statistics Canada, 'Table 6. Police-Reported Crime for Selected Drug Offences, Canada, 2019 and 2020', *Police-Reported Crime Statistics in Canada, 2020* (blog), n.d., 6, https://www150.statcan.gc.ca/n1/pub/85-002-x/2021001/article/00013/tbl/tbl06-eng.htm.

58 Canadian Centre on Substance Use and Addiction, *Methamphetamine*.

59 Ibid.

60 Ibid.

61 UNODC, responses to the annual report questionnaire.

62 See the online methodological annex to the present report.

63 V. Raúl García-Aurrecoechea et al., 'Increasing Methamphetamine Use Trends Alert among Patients in Mexico', *Journal of Substance Use* 23, no. 5 (3 September 2018): 500–505, https://doi.org/10.1080/14659891.2018.1430182.

64 SAMSHA, Center for Behavioral Health Statistics, and and Quality, *Treatment Episode Data Set (TEDS) 2019. Admissions to and Discharges From Publicly Funded Substance Use Treatment*.

65 Jeremy Miller et al., 'Methamphetamine Abuse Trends in Psychiatric Emergency Services: A Retrospective Analysis Using Big Data', *Community Mental Health Journal* 56, no. 5 (July 2020): 959–62, https://doi.org/10.1007/s10597-020-00563-1.

66 Stephen D. Dickson et al., 'Methamphetamine-Associated Heart Failure Hospitalizations Across the United States: Geographic and Social Disparities', *Journal of the American Heart Association* 10, no. 16 (17 August 2021), https://doi.org/10.1161/JAHA.120.018370.

67 Tiffany Chen et al., 'Methamphetamine Exposures Reported to United States Poison Control Centers, 2000–2019', *Clinical Toxicology* 59, no. 8 (3 August 2021): 705–14, https://doi.org/10.1080/15563650.2020.1861287.

68 UNODC, responses to the annual report questionnaire.

69 Statistics Canada, 'Wastewater Analysis Suggests That Consumption of Fentanyl, Cannabis and Methamphetamine Increased in the Early Pandemic Period', 26 July 2021, https://www150.statcan.gc.ca/n1/daily-quotidien/210726/dq210726a-eng.htm.

70 Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health* (Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, 2021).

71 Alexander B. Montgomery, Isaac Bowers, and Bikram Subedi, 'Trends in Substance Use in Two United States Communities during Early COVID-19 Lockdowns Based on Wastewater Analysis', *Environmental Science & Technology Letters* 8, no. 10 (12 October 2021): 890–96, https://doi.org/10.1021/acs.estlett.1c00426.

72 SCORE, *Wastewater Monitoring Data 2011-2020 Sewage Analysis CORe Group Europe*, 2020.

73 Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

74 Manop Kanato et al., *ASEAN Drug Monitoring Report 2020* (Bangkok: ASEAN Narcotics Cooperation Center, 2021).

75 Office of National Narcotics Control Commission, *China Drug Situation Report 2020*, 2021.

76 UNODC, responses to the annual report questionnaire.

77 Toshihiko Matsumoto et al., 'Impact of COVID-19-related Stress on Methamphetamine Users in Japan', *Psychiatry and Clinical Neurosciences* 75, no. 7 (July 2021): 236–38, https://doi.org/10.1111/pcn.13220.

78 UNODC, responses to the annual report questionnaire.

79 Kanato et al., *ASEAN Drug Monitoring Report 2020*.

80 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

81 Kanato et al., *ASEAN Drug Monitoring Report 2020*.

82 UNODC, responses to the annual report questionnaire.

83 Manop Kanato, Poonrut Leyatikul, and Chuanpit Choomwattana, *ASEAN Drug Monitoring Report 2016*, 2017.

84 UNODC, responses to the annual report questionnaire.

85 Ibid.

86 UNODC, 'Drug Situation in Afghanistan 2021: Latest Findings and Emerging Threats'.

87 UNODC, responses to the annual report questionnaire.

88 UNODC, 'Drug Situation in Afghanistan 2021: Latest Findings and Emerging Threats'.

89 Ibid.

90 SGU global, 'Afghanistan National Drug Use Survey 2015', 2015, https://colombo-plan.org/wp-content/uploads/2020/03/Afghanistan-National-Drug-Use-Survey-2015-compressed.pdf.

91 Global SMART Programme, *Afghanistan Synthetic Drugs Situation Assessment* (UNODC, 2017).

92 Ibid.

93 UNODC, *Afghanistan's 'Tablet K' – a Forensic Insight into an Emerging Synthetic Drug Market*, Global SMART Update, 2022.

94 UNODC and the Islamic Republic of Afghanistan, *Study on Substance Use and Health among Youth in Afghanistan (2018 Data)*, 2020.

95 "Tablet K" is the street name for a drug with perceived stimulant effects sold in Afghanistan. The name seems to be used for a range of tablet products sold on the drug market. It is possible that tablets sold under the street name "tablet K" contain methamphetamine, MDMA, or a range of other substances.

96 UNODC, *Afghanistan's 'Tablet K' – a Forensic Insight into an Emerging Synthetic Drug Market*.

97 Ebrahim Moghimi Sarani et al., 'Investigating the Sequential Patterns of Methamphetamine Use Initiation in Iran', *Substance Abuse Treatment, Prevention, and Policy* 15, no. 1 (December 2020): 52, https://doi.org/10.1186/s13011-020-00297-z.

98 Alireza Noroozi, Mohsen Malekinejad, and Afarin Rahimi-Movaghar, 'Factors Influencing Transition to *Shisheh* (Methamphetamine) among Young People Who Use Drugs in Tehran: A Qualitative Study', *Journal of Psychoactive Drugs* 50, no. 3 (27 May 2018): 214–23, https://doi.org/10.1080/02791072.2018.1425808.

99 Leili Abedi Gheshlaghi et al., 'Prevalence of Amphetamine-Type Stimulants Use in Iran: A Systematic Review and Meta-Analysis', *Journal of Substance Use* 26, no. 6 (2 November 2021): 569–85, https://doi.org/10.1080/14659891.2021.1879289.

100 Maziyar Ghiabi, *Drugs Politics: Managing Disorder in the Islamic Republic of Iran*, 1st ed. (Cambridge University Press, 2019), https://doi.org/10.1017/9781108567084.

101 EMCDDA, *Methamphetamine Developments in South Asia: The Situation in Iran and the Implications for the EU and Its Neighbours*, EU4MD SPECIAL REPORT, 2021.

102 Mohammad Tavakoli et al., 'Methamphetamine Dependence Among Iranian Female Methadone Patients: A Cross-Sectional Survey of Three Cities of Iran', *Iranian Journal of Psychiatry and Behavioral Sciences* 12, no. 2 (19 February 2018), https://doi.org/10.5812/ijpbs.62866

103 Massah and Moradi, 'The Prevalence of Methamphetamine Dependence among Iranian Women in Methadone Maintenance Therapy in Tehran, Iran'.

104 Alammehrjerdi, Ezard, and Dolan, 'Methamphetamine Dependence in Methadone Treatment Services in Iran'.

105 Somayeh Paknahad, Maryam Akhgari, and Masoud Ghadipasha, 'An Alarming Rise in the Prevalence of Deaths with Methamphetamine Involved in Tehran, Iran 2011-2018', *Forensic Science, Medicine and Pathology* 17, no. 2 (June 2021): 208–15, https://doi.org/10.1007/s12024-020-00339-9.

106 UNODC, responses to the annual report questionnaire.

107 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2019–20*.

108 Ibid.

109 UNODC, responses to the annual report questionnaire.

110 Sutherland, R et al., *Australian Drug Trends 2021: Key Findings from the National Ecstasy and Related Drug Reporting System (EDRS) Interviews* (NDARC, Sydney, 2021), https://doi.org/10.26190/T6SH-G213; Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services in Australia Annual Report*, Cat. No. HSE 250 (Canberra: AIHW, 2021).

111 Rebecca McKetin et al., 'Trends in Treatment Episodes for Methamphetamine Smoking and Injecting in Australia, 2003–2019', *Drug and Alcohol Review* 40, no. 7 (November 2021): 1281–86, https://doi.org/10.1111/dar.13258.

112 UNODC, responses to the annual report questionnaire.

113 Ibid.

114 Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services in Australia Annual Report*.

115 UNODC, responses to the annual report questionnaire.

116 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*, Drug Statistics Series No. 32, PHE 270 (Canberra: AIHW, 2020).

117 Sutherland, R et al., *Australian Drug Trends 2021*.

118 Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services in Australia Annual Report*.

119 Sutherland, R et al., *Australian Drug Trends 2021*.

120 Australian Institute of Health and Welfare, *Alcohol and Other Drug Treatment Services in Australia Annual Report*.

121 UNODC, responses to the annual report questionnaire.

122 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*.

123 McKetin et al., 'Trends in Treatment Episodes for Methamphetamine Smoking and Injecting in Australia, 2003–2019'.

124 Ibid.

125 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*.

126 Ibid.

127 UNODC, *World Drug Report 2021*, *Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

128 New Zealand Police, *Wastewater Drug Testing in New Zealand: National Overview. Quarter One 2021*, 2021.

129 G Baillie et al., 'Key Findings from the "Australians" Drug Use: Adapting to Pandemic Threats (ADAPT)' Study Wave 4. ADAPT Bulletin No. 4.' (Sydney: National Drug and Alcohol Research Centre, UNSW Sydney, 2021), https://6d4c02d1-3362-4c6f-a837-b46833d5b1a5.filesusr.com/ugd/8a9f74_cf4337cbb3224f05b0a4779cfbe9e0bd.pdf.

130 Molly Carlyle et al., 'Changes in Substance Use Among People Seeking Alcohol and Other Drug Treatment During the COVID-19 Pandemic: Evaluating Mental Health Outcomes and Resilience', *Substance Abuse: Research and Treatment* 15 (January 2021): 117822182110617, https://doi.org/10.1177/11782218211061746.

131 Richard Bade et al., 'Impact of COVID-19 Controls on the Use of Illicit Drugs and Alcohol in Australia', *Environmental Science & Technology Letters* 8, no. 9 (14 September 2021): 799–804, https://doi.org/10.1021/acs.estlett.1c00532.

132 Australian Criminal Intelligence Commission, *National Wastewater Drug Monitoring Program—Report 14* (Commonwealth of Australia, 2021).

133 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

134 Gerfried Kristen, Annelies Schaefer, and Ansgar Von Schlichtegroll, 'Fenetylline: Therapeutic Use, Misuse and/or Abuse', *Drug and Alcohol Dependence* 17, no. 2–3 (June 1986): 259–71, https://doi.org/10.1016/0376-8716(86)90012-8.

135 Haya I. Aljohar et al., 'Gas Chromatography Tandem Mass Spectrometry for the Screening of Adulterants in Seized Captagon™ Tablets', *Journal of Liquid Chromatography & Related Technologies* 42, no. 11–12 (21 July 2019): 358–66, https://doi.org/10.1080/10826076.2019.1610433.

136 Hassan A. Alhazmi et al., 'Chemo-Profiling of Illicit Amphetamine Tablets Seized from Jazan, Saudi Arabia, Using Gas Chromatography-Mass Spectrometry and Chemometric Techniques', *Journal of Chemistry* 2021 (6 October 2021), https://doi.org/10.1155/2021/1517785.

137 Hossein Mohaddes Ardabili et al., 'Tramadol, Captagon and Khat Use in the Eastern Mediterranean Region: Opening Pandora's Box', *BJPsych International*, 19 November 2021, 1–5, https://doi.org/10.1192/bji.2021.53.

138 UNODC, *World Drug Report 2020, Booklet 3, Drug Supply* (United Nations publication, 2020).

139 Caroline Rose and Alexander Söderholm, *Intelligence Briefing - The Captagon Threat - A Profile of Illicit Trade, Consumption, and Regional Realities* (New Lines Institute for Strategy and Policy, 2022).

140 UNODC, Drugs Monitoring Platform., n.d.

141 INCB, *Report of the International Narcotics Control Board for 2021, (E/INCB/2021/1)*, 2022.

142 Etana Syria, 'Study: Security Trends & Threats in South Syria', 5 April 2022.

143 Caroline Rose and Alexander Söderholm, *Intelligence Briefing - The Captagon Threat - A Profile of Illicit Trade, Consumption, and Regional Realities*.

144 Ibid.

145 Ibid.

146 Husam Abazid et al., 'Drug Abuse in Syria: Pattern of Use, Causes and Perception as Perceived by Syrian Addicts', *Journal of Pharmaceutical Health Services Research* 11, no. 2 (1 June 2020): 183–88, https://doi.org/10.1111/jphs.12345.

147 EMCDDA, *European Drug Report 2021: Trends and Developments* (Luxembourg: Publications Office of the European Union, 2021).

148 EMCDDA and Europol, *EU Drug Market: Methamphetamine*, EU Drug Markets: In-Depth Analysis (Lisbon, 2022), https://www.emcdda.europa.eu/publications/eu-drug-markets/methamphetamine_en.

149 EMCDDA, *European Drug Report 2021: Trends and Developments*.

150 EMCDDA, 'An Analysis of Drugs in Used Syringes from Sentinel European Cities: Results from the ESCAPE Project, 2018 and 2019, Technical Report' (Luxembourg: Publications Office of the European Union, 2021), https://www.emcdda.europa.eu/system/files/publications/13571/ESCAPE_report_2018_2019-2.pdf.

151 SCORE, *Wastewater Monitoring Data 2011-2020 Sewage Analysis CORe Group Europe*.

152 EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland', 15 December 2021, https://www.emcdda.europa.eu/publications/data-fact-sheets/european-web-survey-drugs-2021-top-level findings-eu-21-switzerland_en; EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings in the Western Balkans', Data Fact Sheets, 15 December 2021.

153 European Monitoring Centre for Drugs and Drug Addiction, *European Drug Report 2021: Trends and Developments* (Luxembourg: Publications Office of the European Union, 2021).

154 Ibid.

155 Ibid.

156 EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland'; EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings in the Western Balkans'.

157 INCB, *2020 Annual Report on Precursors: Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*, 2021.

158 Ibid.

159 Ibid.

160 INCB, *2021 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*.

161 Ibid.

162 Ibid.

163 Ibid.

164 INCB, *2020 Annual Report on Precursors: Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances*.

165 Jacob Fox et al., 'Drugs of Abuse and Novel Psychoactive Substances at Outdoor Music Festivals in Colorado', *Substance Use & Misuse* 53, no. 7 (7 June 2018): 1203–11, https://doi.org/10.1080/10826084.2017.1400067

166 European Monitoring Centre for Drugs and Drug Addiction, *Monitoring Drug Use in Recreational Settings across Europe: Conceptual Challenges and Methodological Innovations: Technical Report*. (LU: Publications Office, 2018), https://data.europa.eu/doi/10.2810/349958.

167 Tomáš Mackuľak et al., 'Music Festivals and Drugs: Wastewater Analysis', *Science of The Total Environment* 659 (April 2019): 326–34, https://doi.org/10.1016/j.scitotenv.2018.12.275.

168 Mounteney et al., 'Nine Reasons Why Ecstasy Is Not Quite What It Used to Be'.

169 Olivia Price et al., 'Changes in Illicit Drug Use and Markets with the COVID-19 Pandemic and Associated Restrictions: Findings from the Ecstasy and Related Drugs Reporting System, 2016–20', *Addiction* 117, no. 1 (January 2022): 182–94, https://doi.org/10.1111/add.15620

170 EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland', Data Fact Sheets, January 2022.

171 EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings in the Western Balkans'.

172 UNODC, *World Drug Report 2021, Booklet 4, Drug Market Trends: Cocaine, Amphetamine-Type Stimulants*.

173 UNODC, *World Drug Report 2018, Booklet 4, Drugs and Age: Drugs and Associated Issues among Young People and Older People.* (United Nations publication, 2018).

174 EMCDDA, *European Drug Report 2021: Trends and Developments*.

175 Ibid.

176 EMCDDA, 'ESPAD Report 2019: Results from the European School Survey Project on Alcohol and Other Drugs' (Luxembourg: Publications Office of the European Union, 2020), http://www.espad.org/espad-report-2019#downloadReport.

177 EMCDDA, 'Statistical Bulletin 2021', 2021, https://www.emcdda.europa.eu/data/stats2021_en.

178 EMCDDA, *European Drug Report 2021: Trends and Developments*.

179 Ibid.

180 EMCDDA, *Recent Changes in Europe's MDMA/Ecstasy Market*.

181 EMCDDA, *European Drug Report 2021: Trends and Developments*.

182 EMCDDA, *Recent Changes in Europe's MDMA/Ecstasy Market*.

183 EMCDDA, 'Statistical Bulletin 2021'.

184 EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland'.

185 EMCDDA, 'European Web Survey on Drugs 2021: Top Level Findings in the Western Balkans'.

186 EMCDDA, *European Drug Report 2021: Trends and Developments*.

187 See the online methodological annex to the present report.

188 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*.

189 Sutherland, R et al., *Australian Drug Trends 2021*.

190 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2019*.

191 Sutherland, R et al., *Australian Drug Trends 2021*.

192 Matthew J. A. O'Reilly et al., 'A Quantitative Analysis of MDMA Seized at New South Wales Music Festivals over the 2019/2020 Season: Form, Purity, Dose and Adulterants', *Drug and Alcohol Review* 41, no. 2 (February 2022): 330–37, https://doi.org/10.1111/dar.13412.

193 UNODC, responses to the annual report questionnaire.

194 Ibid.

195 Price et al., 'Changes in Illicit Drug Use and Markets with the COVID-19 Pandemic and Associated Restrictions'.

NEW PSYCHOACTIVE SUBSTANCES

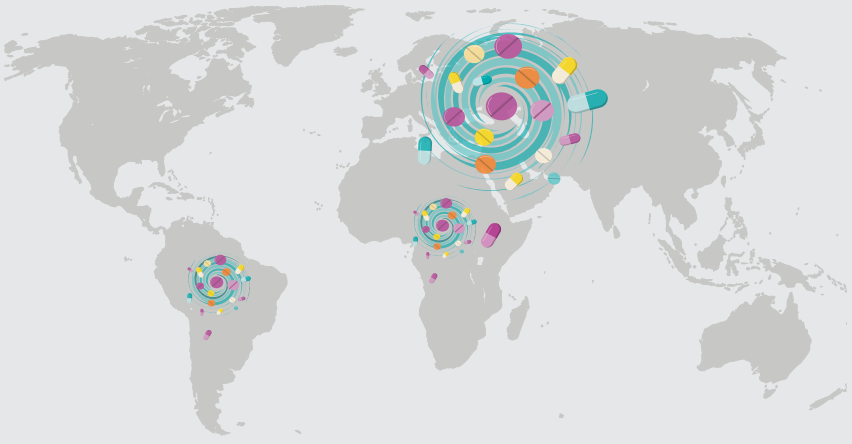
Global overview of new psychoactive substances

By definition, NPS are substances of abuse, either in a pure form or in the form of a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the Convention on Psychotropic Substances of 1971, but that may pose a threat to public health.[1] These substances can be analogues of existing controlled drugs or newly synthesized chemicals designed to mimic the psychoactive effects of controlled drugs.[2] They are not necessarily "new" in the sense of being known only for a short period of time; some have been established on the drug market for decades.[3]

NPS is a category of substances that are fast-evolving, typically volatile and often diversified. The category includes different types of substances in terms of their composition, (il)legitimate use and position in the global drug markets. The great majority of NPS are substances that have no legitimate use, and have no established global large and long-standing markets that compare with the controlled "traditional" drugs, with few exceptions. One is, for example, khat, a plant-based substance that is not under international control but that has a long-established market in some regions of the world. Another exception is the non medical use of two pharamaceuticals that are not under international control: tramadol and ketamine. Technically, these substances meet the definition of NPS but the underlining challenges posed by these substances are different from the large NPS set of substances. For example, tramadol, which has an established use for pain management, shares similarities with other opioids under international control. In the present report, the discussion of trends in tramadol misuse and seizures is included in the chapter on opioids, while ketamine, which is included in the WHO list of essential medicines and used as a local anaesthetic in many settings, is addressed in the present chapter.

There are multiple ways to categorize NPS, for example, they can be grouped according to origin – whether plant-based or synthetic, according to psychotropic effects, or according to chemical structure.

NPS MARKET EXPANDING PARTICULARLY IN EASTERN EUROPE AND CENTRAL ASIA AND AT A SMALLER LEVEL IN AFRICA AND LATIN AMERICA AND THE CARRIBEAN



Complexities of monitoring new psychoactive substances

There are multiple challenges in monitoring the use and supply of NPS:

NPS comprise a large group of substances. In the period 2009–2021, 134 countries reported a combined 1,127 such substances to the UNODC early warning advisory on new psychoactive substances and new substances are discovered and added to the list on a continuous basis (50 so far in 2021[4]). For these reasons, it is not possible to monitor the use of all of these substances using traditional methods such as household surveys.

NPS is a fluid category. New substances are placed under international control every year and it is difficult for monitoring to keep pace and adjust.[a]

Very few NPS have a global market. The extent of the use of each individual substance is typically confined to specific localities and is geographically limited to a few countries.[5]

Self-reported NPS use in population surveys poses specific challenges:

- When new substances appear, they typically have many local street names, making it problematic to develop standardized national questionnaires. Achieving comparability across countries is even more difficult.
- Surveys often use composite categories to monitor groups of substances (for example, "synthetic cannabinoids", "synthetic cathinones" or "NPS"). However, it is not uncommon for users to not be able to categorize the substance they have used within the given categories.[6]
- NPS are often used as adulterants, and users may be unaware that they are using NPS, meaning that users are unable to report their use in a survey.[7]

Monitoring NPS using biological methods (for example, analysis of urine, blood, saliva, or hair) also presents challenges:

- Rapid screening tools to identify NPS in biological samples, such as those available for "traditional" drugs (colorimetric methods or immunoassays for NPS) have only recently emerged[8] and are limited in terms of what substances they can detect. Such screening tests are only the first part of substance identification and cannot be used on their own for confirmatory analysis. Only relatively costly laboratory methods, such as gas and liquid chromatographic mass spectrometry-based methods or high-resolution mass spectrometry, can determine all NPS present in samples.[9]

Monitoring NPS use through analysis of communal wastewater is an additional approach.[10] However, levels of NPS in wastewater can be very low, thus broad monitoring may be limited. This method has proved successful when used in limited circumstances, for example, in monitoring locations near large music festivals,[11] including by placing portable toilets at recreational venues.[12] A similar approach is the testing of saliva samples of people operating automobiles in close proximity to music events.[13]

Monitoring NPS use seems most effective when using targeted samples from locations where use is expected to be high (e.g. nightlife settings) or when employing less conventional methods, such as online surveys or sampling from social media or online discussion forums; however, in such cases, it may not be possible to generalize findings to larger or national populations on the basis of the selected samples.[14]

a For the UNODC early warning advisory on new psychoactive substances, for example, an explicit decision was made to continue monitoring controlled NPS in order to identify trends and the impact of controls. Thus, NPS statistics based on the UNODC early warning advisory also contain, intentionally, information on NPS recently placed under control.

NEW PSYCHOACTIVE SUBSTANCES REPORTED TO UNODC BY 2021				
	Examples	**Street name**	**Forms and routes of administration**	**Effects**
Aminoindanes (9 substances)	1-aminoindane, 2-aminoindane, MDAI	"MDAI gold", "pink Champagnes"	pills, powder and crystals; usually ingested but also by means of snorting	central nervous system stimulant effects (mimicking the effects of controlled drugs such as cocaine, amphetamine, methamphetamine and "ecstasy")
Plant-based substances (22 substances)	ayahuasca, datura, Hawaiian baby woodrose, iboga, kava, khat, kratom, peyote cactus, *Salvia divinorum*	khat: "qat", "gat", "chat", "miraa", "murungu", "Arabian tea", "Abyssinian tea" kratom: "thang", "kakuam", "thom", "ketum", "biak" *Salvia divinorum*: "Maria Pastora", "sage of the seers", "diviner's sage", "Salvia", "Sally-D", "magic mint", "purple sticky", "shepherdess's herb"	fresh or dried leaves, seeds, liquid extract (including with alcohol), powder; mostly ingested, sometimes smoked	varying (mostly stimulant or hallucinogenic effects, although for many substances, the effects may not even be known and interactions with other substances are not fully understood)
Phencyclidine-type substances (26 substances)	ketamine, 3-fluorophencyclidine	"special K", "K", "vitamin K"		phencyclidine-type substances predominantly act either as central nervous system stimulants or as dissociatives
Piperazines (27 substances)	*m*CPP, BZP	piperazines are frequently sold as "ecstasy". Other street names are "pep pills", "social tonics", "party pills", "Jax", "A2", "Benny bear", "flying angel", "legal E" or "legal X" and "nemesis"; *m*CPP is known as "3CPP", "3C1-PP" or "CPP"	pills, capsules, powder. Mainly ingested. Other forms of appearance/administration are rare but possible.	most piperazines act as central nervous system stimulants. In rare cases, piperazines (e.g. MT-45) can also act as opioids
Novel benzodiazepines (30 substances)	etizolam, phenazepam, pyrazolam, flualprazolam, diclazepam			sedative and tranquillizing effects

NEW PSYCHOACTIVE SUBSTANCES REPORTED TO UNODC BY 2021

	Examples	Street name	Forms and routes of administration	Effects
Tryptamines (60 substances)	5-MeO-DMT, 5-MeO-DIPT	"foxy methoxy", "alpha-O", "alpha", "O-DMS", "5-MEO"	dried or brewed mushrooms, capsules, tablets, powder or liquid form. Tryptamines are generally swallowed, sniffed, smoked or injected.	tryptamines act predominantly as hallucinogens
Fentanyl analogues (79 substances)	carfentanil, acrylfentanyl			central nervous system depressant effects (similar to those of opioids)
Other substances (a diverse group of substances, 173 substances)	synthetic opioids (e.g. U-47700)			
Phenethylamines (176 substances)	2C-B-FLY, 2C-E, 4-FA, bromo-dragonfly, MBDB, phenethylamine, PMMA	"Europa", "4-FMP", "*para*-fluoroamphetamine", "RDJ", "4-MMA", "methyl-MA"	pills, powder, blotter paper; ingested	most phenethylamines act as either central nervous system stimulants or as hallucinogens
Synthetic cathinones (201 substances)	mephedrone (4-methylmethcathinone), methylone, butylone, 4-fluoromethcathinone, naphyrone, 3-fluoromethcathinone, methedrone, 3,4-dimethyl-methcathinone, *alpha*-PVP, buphedrone, pentedrone and *alpha*-PPP	"research chemicals", "plant food", "bath salts", "glass cleaner"; mephedrone is known as "m-cat", "meph", "drone" or "miaow", methylone: "explosion" or "top cat"	powders, pills (often sold as "ecstasy"); mostly ingested but may be injected; mephedrone is insufflated, injected, ingested by swallowing a powder wrapped in paper ("bombing"), or mixed in a drink	central nervous system stimulant effects
Synthetic cannabinoids (a chemically diverse group – 324 substances)	JWH-018; CP-47,497-C8	"spice gold", "spice silver", "spice diamond", "K2", "bliss", "black mamba", "Bombay blue", "blaze", "genie", "Zohai", ""kronic", "Yucatan fire", "skunk", "moon rocks", "Mr. Smiley"	usually added to plant material by soaking or spraying (often sold to users as adulterated "cannabis"[15]), but in some cases, their solid form (crystalline powder) is added to plant material; more recently, available as e-liquids and impregnated papers;[16] usually smoked, but oral use is also reported	they act on cannabinoid receptors and produce effects similar to those of *delta*-9-tetrahydrocannabinol (THC, the psychoactive component in cannabis)

Source: UNODC, Laboratory and Scientific Service, "Substance groups". Available at www.unodc.org/LSS/Substance.

Note: The number in brackets after each category of substances represents how many substances from each category were reported to UNODC early warning advisory between 2009 and 2021 (data for 2021 are preliminary). There likely exist more, which is to be confirmed in ongoing reporting.

Global supply of new psychoactive substances

In addition to the challenges related to the monitoring of the emergence and use of NPS, there are challenges in aggregating trends across different NPS. For example, adding together the quantities consumed or seized of different NPS can be misleading because the quantity that constitutes a typical dose of a given new psychoactive substance can vary widely. As NPS, in general, only stay on the market for a short time, little is known about the daily or typical doses taken in the recreational use of such substances. Hence, it has become customary to report trends in simple counts of the number of different NPS that are available in a market or that are seen to be of concern. This too is clearly limited, because, for example, a region in which there is occasional use of two relatively benign NPS does not necessarily have a problem on a scale twice as large as that of another region in which there is very widespread use of one very dangerous NPS. Nonetheless, in part to ensure continuity with past reports and in part because there are few better alternatives, trends are described in the present report not only in terms of the number of NPS users and NPS seized but also in terms of the number of different NPS chemicals reported by Member States.

More than 1,100 new psychoactive substances identified to date

The number of NPS identified by national authorities and forensic laboratories over the last 15 years totalled 1,127 by December 2021.[b] This is more than triple the 302 psychoactive substances under international control at the end of 2021.[17]

Many NPS emerge for only a short period of time before disappearing again, for example, because they never generate much demand or because they are eclipsed by other NPS that outcompete them in the market. Thus, a total of 193 NPS previously found on the drug markets were not reported in the period 2017–2020.

b This number includes all NPS identified, including those already placed under international control in recent years (UNODC early warning advisory on new psychoactive substances).

Number of new psychoactive substances identified

Three indicators are used by UNODC to monitor the number of NPS:

Total number of NPS ever identified: the global cumulative number of all the different NPS ever reported to the UNODC early warning advisory on new psychoactive substances. Up until the end of 2021, a total of 1,127 NPS had been reported to UNODC.

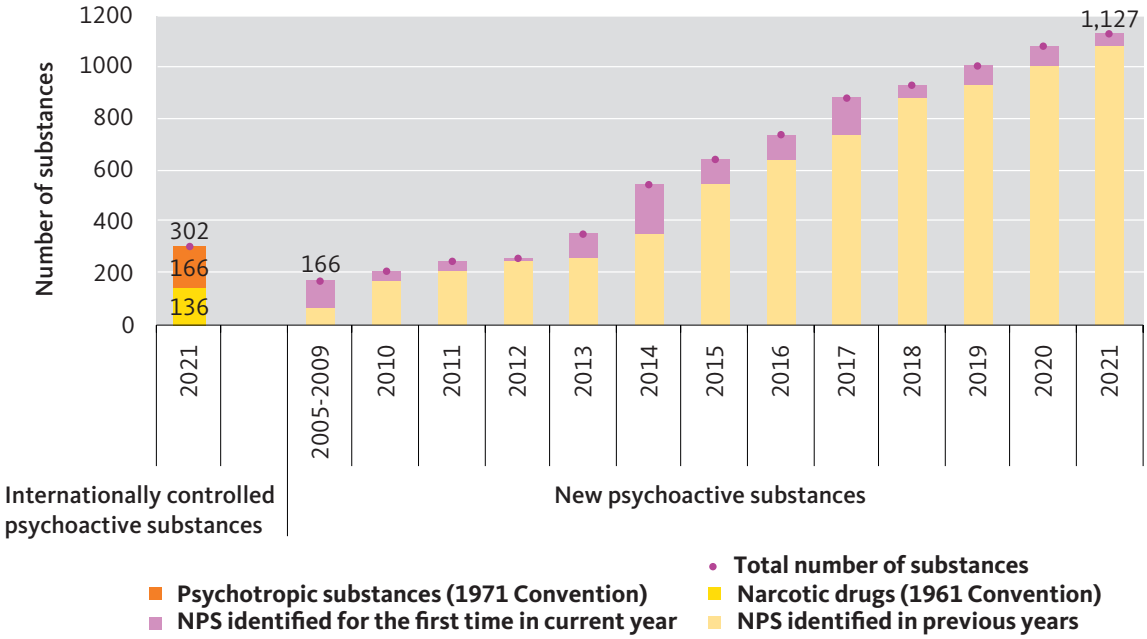
Number of NPS identified in a given year: this number measures how many different, or distinct, substances were reported worldwide in a given year by Member States. A total of 548 different NPS were reported by Member States to the UNODC early warning advisory on new psychoactive substances in 2020.

Number of newly identified NPS in a given year: NPS identified for the first time anywhere in the world, based on reports to the UNODC early warning advisory on new psychoactive substances, in a given year. In 2020, the number of newly identified NPS at the global level was 77 (including 7 the effects of which have not yet been determined).

Given the time needed to process the information provided by Member States, the latest year for which data is available and reported in the present report varies for these three indicators.

NPS can also disappear as NPS when they flourish on the market so much that they are banned outright. For example, some chemicals that were once called NPS and that remain on the market were subsequently scheduled and de jure ceased to be considered NPS. Between 2015 and 2021, a total of 68 NPS were scheduled at the international level, including 21 under the 1961 Convention (mostly fentanyl analogues) and 47 under the 1971 Convention.[18] Some NPS are also placed under national control before they are regulated at

FIG. 70 Number of internationally controlled drugs in 2021, and number of new psychoactive substances identified at the global level, 2005–2021 (cumulative figures)



Sources: UNODC elaboration based on scheduling decisions made by the Commission on Narcotic Drugs at its sixty-fourth session, in April 2021 (see United Nations, *Official Records*, 2021, Supplement No. 8 (E/2021/28-E/CN.7/2021/10)) and previous years; and UNODC early warning advisory on new psychoactive substances.

Note: Since 2009, a total of 68 NPS have been internationally scheduled (all between 2015 and 2021); they have not been deducted from the numbers shown in the figure.

the international level. Countries have adopted different approaches to placing substances under national control. In past years, some countries, such as Australia, Germany, and the United Kingdom, as well as China for some NPS groups, have adopted generic or catch-all legislation on NPS control that covered, ex ante, most if not all possible future variants of psychoactive substances.[c]

Number of new psychoactive substances found on the market has stabilized at about 550 per year

After rapid expansion between 2009 and 2018, the number of distinct NPS found on global drug markets has now stabilized at around 550, i.e. at around half the number of NPS ever identified on drug markets. In 2020, Member States reported 548 NPS on the market, of which 77 were identified for the first time. A year later, the number of NPS identified for the first time fell to 50.[19]

Between 2016 and 2020, most of the NPS identified were stimulants (mostly cathinones and phenethylamines), followed by synthetic cannabinoid receptor agonists, hallucinogens (mostly tryptamines and some phenethylamines) and opioids (mostly fentanyl analogues). While a decrease in the number of synthetic cannabinoids found on markets worldwide has been reported in recent years, the number of cathinones and phenetylamines has remained largely stable, with some declines reported for 2020. A small decline was also noticed for tryptamines in 2020.

c A number of different legislative responses to NPS have been adopted by Member States. For more information, see the United Nations Toolkit on Synthetic Drugs (https://syntheticdrugs.unodc.org/syntheticdrugs/en/legal/index.html)

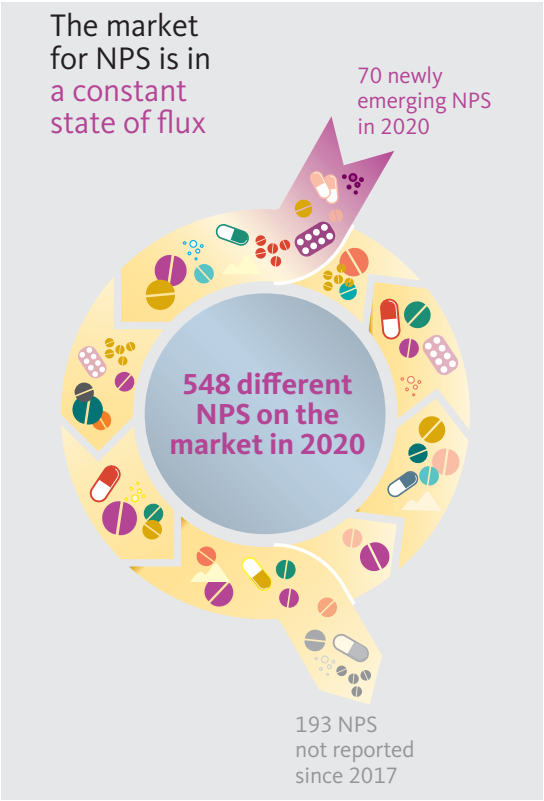
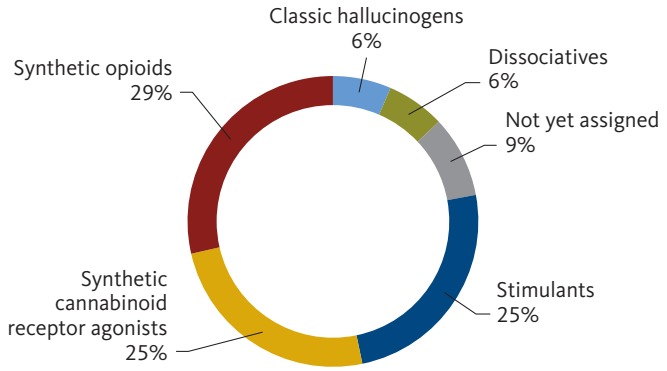


FIG. 71 **Distribution of new psychoactive substances reported for the first time at the global level, by effect group, 2020**



Source: UNODC early warning advisory on new psychoactive substances.

Note: The total number of NPS reported for the first time at the global level amounted to 77 substances.

Number of synthetic opioids continues to grow

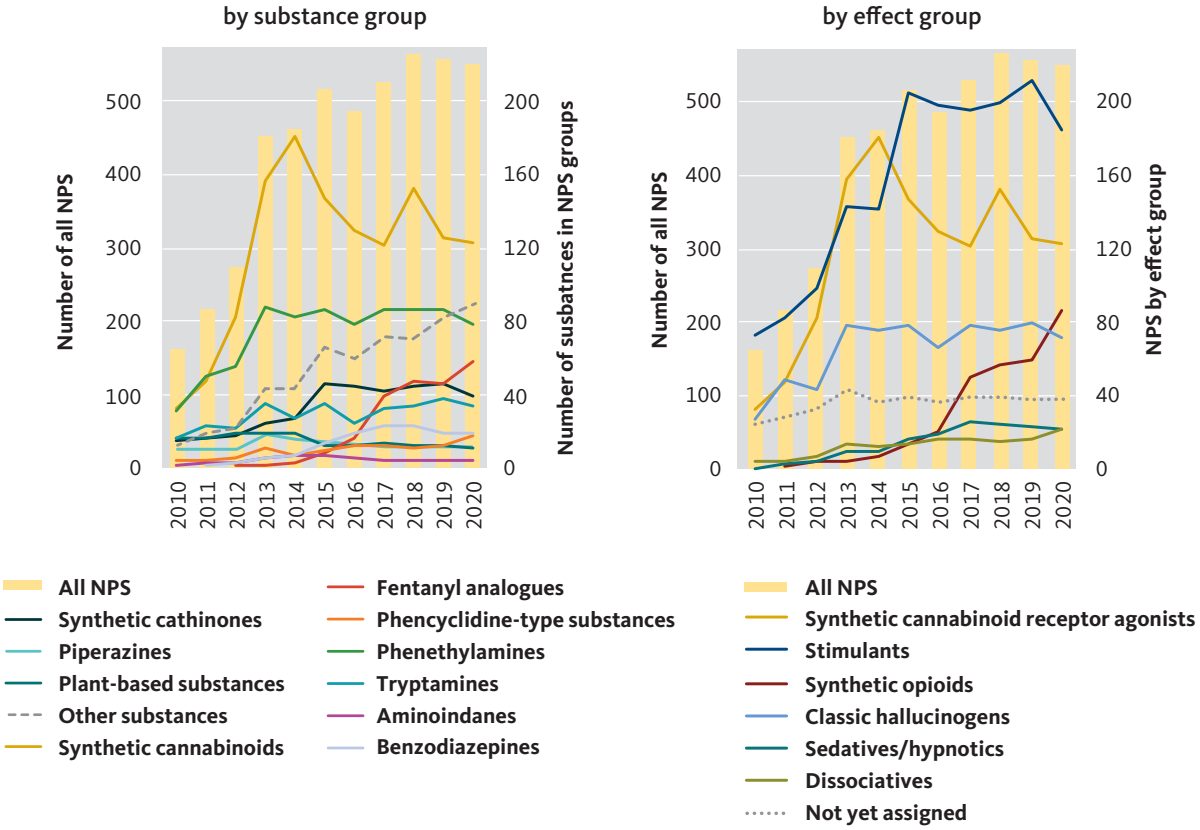
Opioid NPS are the potentially most harmful group of NPS and, in contrast to the general decline in the number of NPS, the number of opioids NPS has continued to grow. The number of opioid NPS found on markets worldwide grew from just one substance in 2009 to 14 in 2015, 56 in 2019 and 87 in 2020,[20] by which time synthetic opioids had become the third most numerous group of NPS in terms of the number of different substances reported by Member States in 2020 (after NPS stimulants and NPS cannabinoid receptor agonists and slightly ahead of NPS hallucinogens).[21] Synthetic opioids accounted for the highest number of NPS identified for the first time at global level in 2020, with 22 new substances (29 per cent of those identified), including both fentanyl analogues and other opioids. Although fentanyl has been under international control since 1964 and a number of fentanyl analogue medicaments were scheduled in the 1980s (sufentanil, alfentanil and 3-methylfentanyl) and in the 1990s (thiofentanyl and remifentanil), a far larger number of fentanyl-type NPS (i.e. fentanyl analogues without any recognized medical use) emerged in the 2010s.[22]

The number of NPS categorized as “other substances” has also continued to grow. "Other substances" include synthetic NPS that do not belong to a precise category, in particular NPS with sedative and hypnotic effects, most of which are benzodiazepine-type NPS.[23] Benzodiazepine-type NPS are often sold at very low prices, sometimes in packages mimicking existing medicines, have varying dosages of active ingredients and contain contaminants, including highly potent synthetic opioids.[24]

Seizures of new psychoactive substances declined in 2020

Tracking seizure trends is difficult because 1 kilogram of a particular NPS can translate into many more daily doses than would 1 kilogram of another and such differences are often more pronounced than differences arising from the analysis of individual drugs that may nevertheless have diverging purity levels. All of the figures given in the present report must be interpreted in that light.

FIG. 72 New psychoactive substances found on markets globally, 2010–2020



Sources: UNODC early warning advisory on new psychoactive substances.

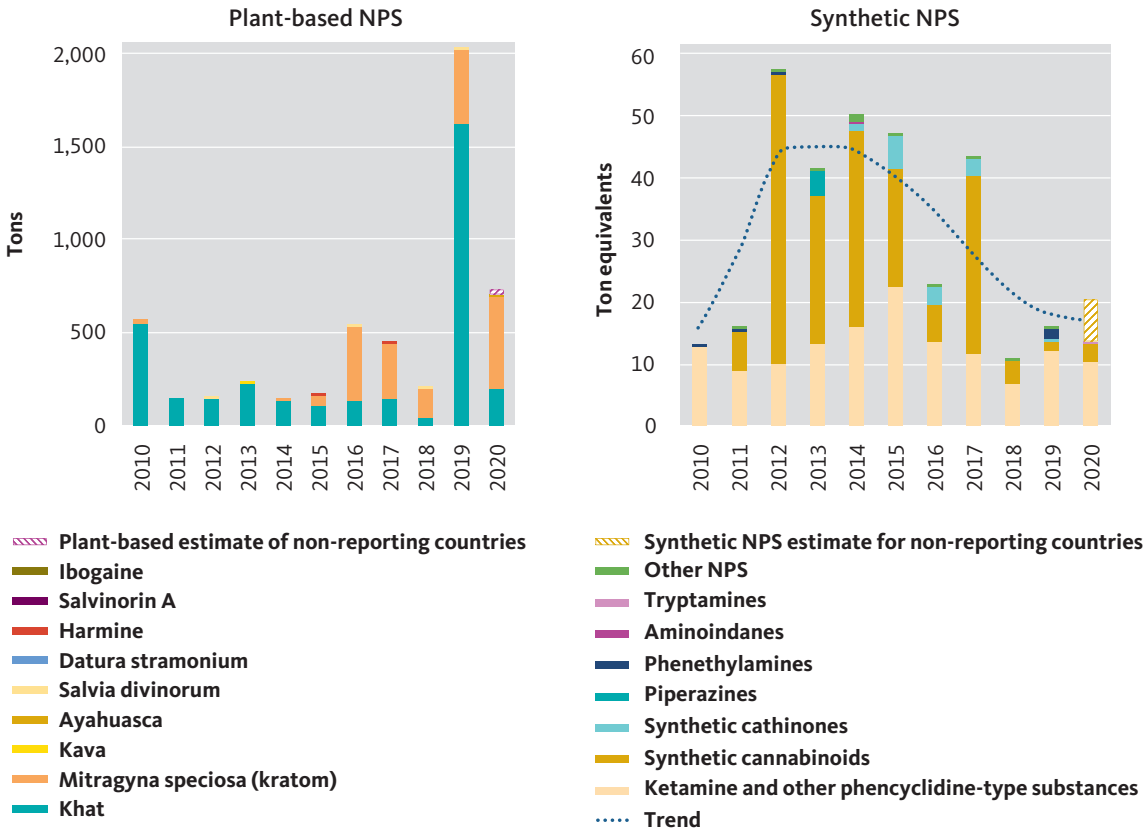
With that caveat in mind, reported quantities of plant-based NPS and synthetic NPS declined year-on-year in 2020.

Even if estimates for non-reporting countries were included, the volume of seizures of plant-based NPS in 2020 would remain below the record levels reported for 2019, although they would nevertheless be higher than in any year in the period 2008–2018. Between 2016 and 2020, khat accounted for 55 per cent of all plant-based NPS seized, in terms of weight, with kratom accounting for almost all of the remainder.

The picture concerning synthetic NPS is less clear. Most of the decline witnessed in 2020 was due to the non-reporting of seizures of NPS by several countries that had previously reported substantial seizures of synthetic NPS. Data from countries that reported seizures in both 2019 and 2020 show an increase in quantities of NPS seized.

Seizures of most synthetic NPS showed significant declines between 2012, when they peaked, and 2020; the total quantity of synthetic cannabinoids seized fell by 94 per cent, and for most other synthetic NPS, the declines were even more pronounced. The total quantity of synthetic cathinones seized in 2020 was 98 per cent lower than at the peak in 2015. The largest quantities of synthetic NPS seized between 2016 and 2020 were of ketamine and other phencyclidine-type

FIG. 73 Global quantities of new psychoactive substances seized, 2010–2020



Sources: UNODC, responses to the annual report questionnaire.

substances (51 per cent), followed by synthetic cannabinoids (41 per cent), synthetic cathinones (6 per cent) and phenetylamines (1.5 per cent). However, the reported declines may well have been statistical artefacts, as, for the most part, different countries reported seizures of NPS to UNODC in 2015 and 2020. As only a small number of countries provided seizure data for both 2015 and 2020 (five countries reporting seizures of cannabinoids, three reporting cathinones, one reporting tryptamines, one reporting piperazines and none reporting phenetylamines), it is not possible to derive meaningful trends.

Interpreting seizures of new psychoactive substances

Seizures of NPS usually take place in countries where the substances are regulated. Variations in NPS seizure figures may therefore reflect changes in national regulation, in addition to changes in supply and the capacity of Member States to detect and identify such substances.

Geographical reach of trafficking in new psychoactive substances continues to expand

The number of countries reporting seizures of synthetic NPS increased from 30 in the period 2009–2010 to 57 in the period 2019–2020, equivalent to an increase from 18 per cent of countries reporting such seizures to 41 per cent between the two periods.[d] A greater geographical spread in NPS reporting is also visible within regions. No country in Africa reported seizures of synthetic NPS in the period 2009–2010, but one did in the period 2019–2020 (Egypt). In Oceania, the number of countries reporting such seizures rose from one to two, in the Americas from two to seven, in Asia from 14 to 22 and in Europe from 13 to 25.

The largest quantities of synthetic NPS reported seized in 2020 were of ketamine, and most of the seizures were reported by countries in East and South-East Asia, specifically, Malaysia, which reported the largest total quantity seized, followed by Thailand and China. Synthetic cannabinoids accounted for the next largest seizures of synthetic NPS, with Turkey reporting the largest total quantity seized, followed by the United States, in 2020. This ranking, however, has changed in recent years; in 2019, the largest seizures of synthetic cannabinoids were reported by Egypt, followed by Turkey and the Russian Federation, whereas in previous years, the United States accounted for the largest seizures, followed by Turkey in 2017 and 2018 and by the Russian Federation in 2015 and 2016.

The number of countries reporting seizures of plant-based NPS also rose, from 28 in the period 2009–2010 to 37 in the period 2019–2020, suggesting that the smuggling of plant-based NPS did not expand as fast in geographical terms as trafficking in synthetic NPS. The largest seizures of plant-based NPS in 2020 concerned kratom. The largest seizures of the substance continued to be reported by Malaysia, followed by Thailand and Myanmar. The next largest plant-based NPS seizures in 2020 concerned khat. As in 2019, Saudi Arabia accounted for the largest total quantity of khat seized, whereas each year between 2011 and 2018, the United States seized the largest total quantity of khat.

Global demand for new psychoactive substances

Use of new psychoactive substances is generally at a lower level than the use of drugs under international control

Epidemiological data on the use of NPS are scarce and existing data have limited comparability, especially across countries, owing to differences in the definitions and data collection methodologies used.

A total of 77 countries across all regions reported NPS use in their territory in 2020,[25] representing the majority of countries responding to the UNODC annual report questionnaire. The most commonly mentioned NPS were ketamine (by 56 countries) and synthetic cannabinoid receptor agonists (synthetic cannabinoids) (by 38 countries). However, when asked about the role that NPS play in their drug situation, most countries reported that the use of NPS was far lower than the use of controlled drugs. No country listed NPS as the group of drugs most used, and only one country, Mauritius, named NPS as the second most commonly used group of substances.

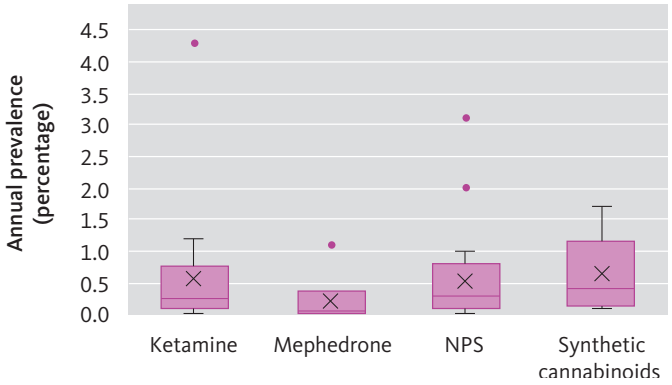
A specific non-controlled substance that has an established use, particularly in parts of the Gulf and East Africa, is khat, although data about its use remain scarce.[e] Recent surveys are only available from Kenya, where the use of khat in the past year was reported by 4.8 per cent of population aged 15–64 in 2018.

The level of use of any NPS among the general population (mostly among those aged 15–64) remains limited. Of the 23 countries with available data, 21 reported that 1 per cent or less of the population had used NPS in the past year. The highest prevalence levels were observed for synthetic cannabinoids, with five countries reporting prevalence levels above 1 per cent among their populations.

d The total number of countries reporting any drug seizure to UNODC amounted to 167 in the period 2009–2010 and 138 in the period 2019–2020.

e See the chapter entitled "*Amphetamine-type stimulants*" in the present booklet.

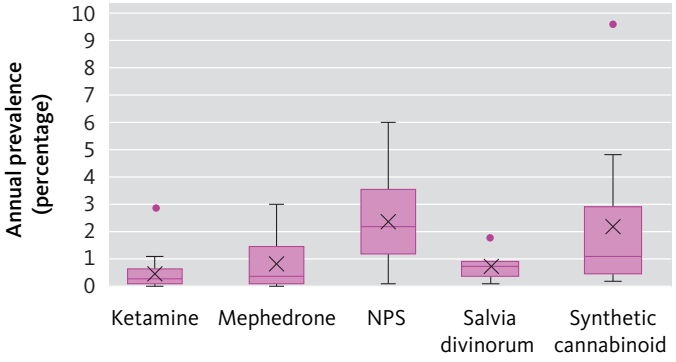
FIG. 74 **Use of new psychoactive substances among the general population, based on categories and terminology used in household surveys, most recent data available for the period 2013–2020**



Source: UNODC, responses to the annual report questionnaire.

Note: Mephedrone was placed under international control in 2015, however, many countries continue to monitor the drug under the "NPS" category. Dots represent outliers (countries with higher prevalence than 1.5 times interquartile range) and 'x' represents mean values. Numbers of reporting countries vary per substance: 19 countries reported the prevalence of ketamine use, 6 countries the prevalence of mephedrone use, 23 countries the prevalence of overall NPS use and 14 the prevalence of synthetic cannabinoids.

FIG. 75 **Use of new psychoactive substances, based on categories and terminology used in school surveys, most recent data available for the period 2014–2019**



Source: UNODC, responses to the annual report questionnaire.

Note: Mephedrone was placed under international control in 2015, however, many countries continue to monitor the drug under the "NPS" category. Dots represent outliers (countries with higher prevalence than 1.5 times interquartile range) and 'x' represents mean values. Numbers of reporting countries vary per substance: 21 countries reported the prevalence of ketamine use, 6 countries the prevalence of mephedrone use, 44 countries the prevalence of overall NPS use, 7 countries the prevalence of Salvia divinorum and 13 the prevalence of synthetic cannabinoids.

A total of 44 countries provided data on the use of NPS among school populations (most often young people aged 15–16 years). As with some controlled drugs, NPS use was higher in this age group than among the general population, with a median value of 2.2 per cent. The highest prevalence was recorded in relation to synthetic cannabinoids (a median prevalence of past-year use of 1.1 per cent, according to data from 13 countries).

In the United States, the use of NPS is at a lower level than the use of drugs under international control. For example, 28 per cent of tenth-grade students reported having used "marijuana" in the past year in 2020, but only 2.5 per cent reported past-year use of "synthetic marijuana" (the term used for synthetic cannabinoids in the study).[26] Wastewater analysis in Europe confirms that the use of NPS is overall significantly lower than the use of internationally controlled drugs.[27]

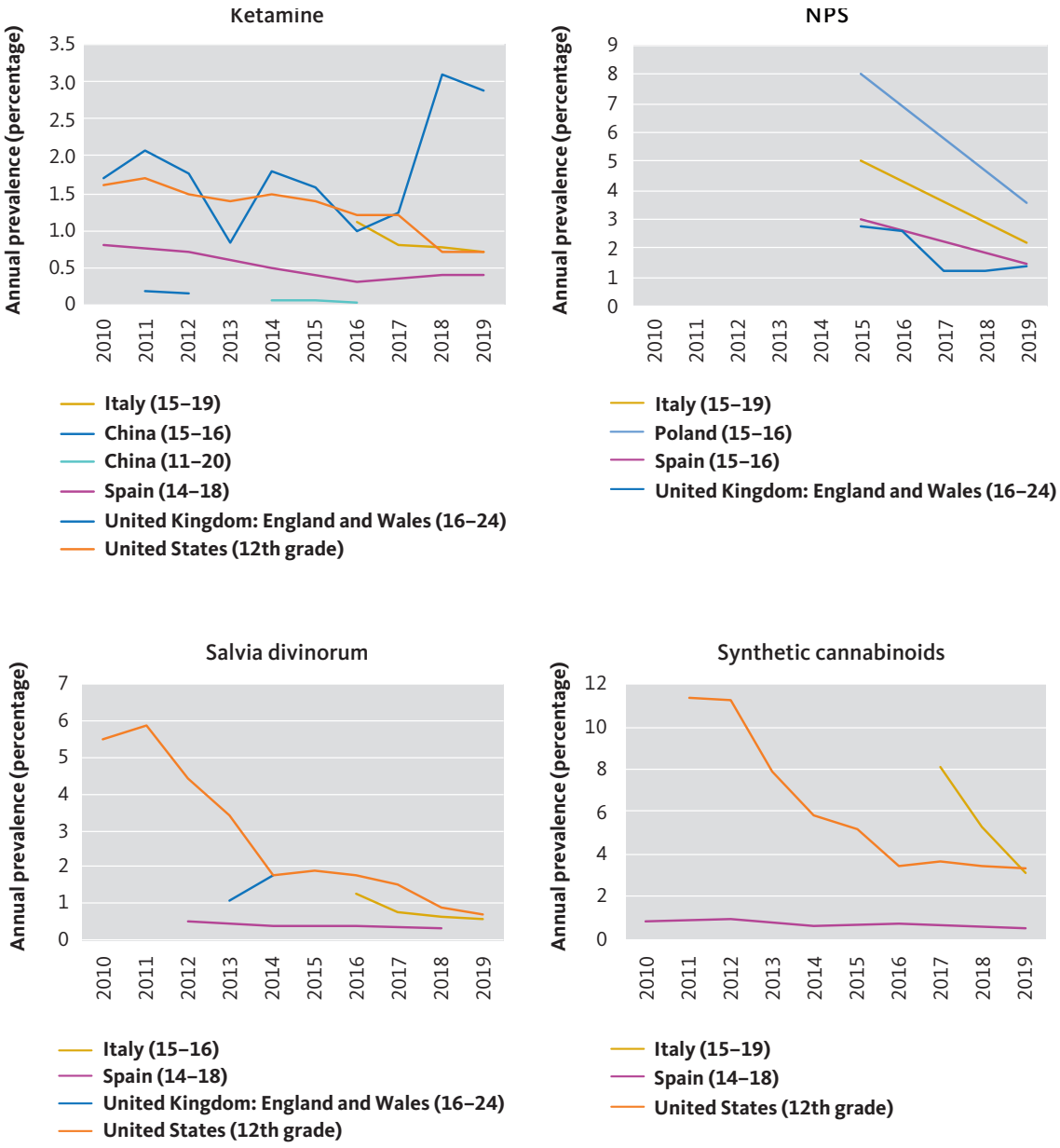
Where available, long-term trend data indicate stable or declining use of new psychoactive substances, except for ketamine

Establishing trends in the use of NPS is even more challenging than defining levels of use. The limited information available suggests a decrease in the past decade among the young population in high-income countries, with some exceptions, such as ketamine use in England and Wales.

The Global Drug Survey confirms the general decline in NPS use in high-income countries up to and including 2017, after which the past-year use of some NPS, in particular those with hallucinogenic effects, seems to have slightly increased until 2019 among the study participants. At the same time, the more pronounced increase in ketamine use, seen in England and Wales is also reflected in this online survey. It should be kept in mind that the Global Drug Survey is not a representative sample of people who use drugs globally, and the participation of people who use drugs from different countries changes annually.

The reasons for this general decline are not clear. International and national controls implemented to address NPS use may have played some role, but scientific

FIG. 76 Trends in the use of new psychoactive substances, as reported in school surveys, selected countries in Asia and Europe, and the United States, 2010–2019



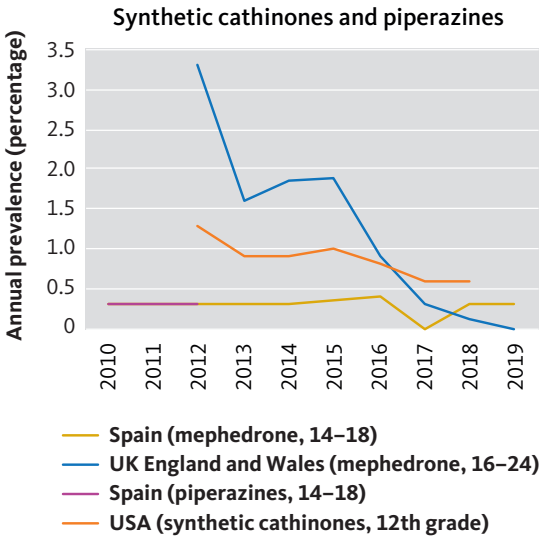
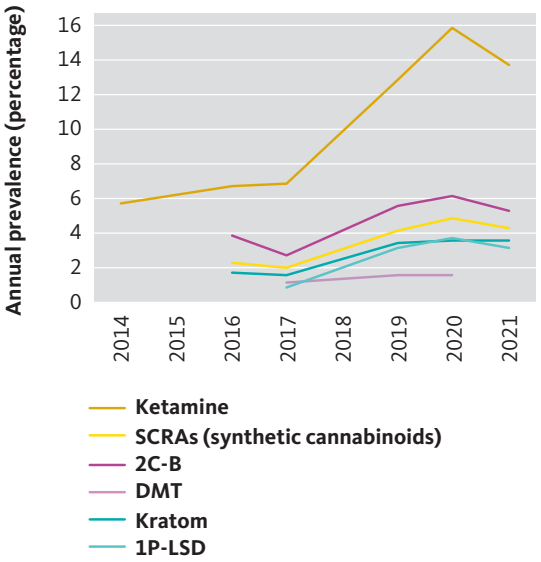


FIG. 77 Use of selected new psychoactive substances, among people responding to an online survey, 2014–2021



Source: Global Drug Survey reports for various years.

Note: The presented data should be used with caution due to methodological limitations. Coverage of the Global Drug Survey is limited to a non-representative convenience sample of roughly 100,000 self-selected people who use drugs from more than 50 (mostly high-income) countries. Further limitations exist in the comparability of data over time, because the obtained sample varies each year.

evidence on their net impact is not available. Researchers in the United States have suggested a "honeymoon period" theory for NPS, referring to periods in which news about the positive effects of an NPS spreads faster than news about its adverse reactions, which explains the initial elevated levels of use followed by a decline.[28]

While the use of NPS has slackened in high-income countries, where it first emerged approximately in the 1990s, there are signs that it has more recently expanded into other regions of the world.

Despite its apparent decrease among the general population in high-income countries, the use of NPS continues to remain prevalent among some vulnerable population groups. In Europe, the use of synthetic cannabinoids may be more prevalent among the homeless, prisoners and other vulnerable groups.[29] In six European countries, for example, marginalized users were more likely to report daily use of synthetic cannabinoids, compared with persons sampled in nightlife settings and online (17.9 per cent versus 1.2 per cent and 2.8 per cent, respectively).[30] This was also true for NPS with stimulant effects (18.2 per cent daily use among marginalized users versus 0.3 per cent in nightlife settings and 1 per cent online). The same study also revealed that marginalized users were more likely to inject NPS.[31] Vulnerable groups use synthetic cannabinoids for a number of reasons, including because of their comparatively low prices and to avoid positive results when being tested for drug use (most drug tests do not detect synthetic cannabinoids).[32] In addition, regular NPS use, mainly of synthetic cannabinoid receptor agonists and synthetic cathinones, was found to be highly prevalent in some marginalized rural populations in Hungary, in a context of polysubstance use.[33] Motivations for the use of NPS among this group included the need to cope with stress, crisis and anxiety and to escape from insecurity and a chaotic life. Positive effects of the substances were rarely mentioned.[34]

Another group of NPS users are "psychonauts", a group of people who use drugs who consciously seek out NPS for experimentation.[35] Meanwhile, many users of NPS do so unknowingly, consuming the substances as adulterants of other drugs. These adulterated products have likely contributed to known outbreaks of poisonings, for example those involving synthetic cannabinoids in Canada, the Russian Federation, the United States and Europe, including some fatal cases.[36]

Owing to the current data gaps, it is not possible to quantify the harm to global health posed by NPS, but the limited information suggests that the globally aggregated harm at the population level is less than that of controlled drugs, mainly because of the low prevalence of NPS use. Eighteen countries reported any admissions into treatment for NPS (most often synthetic cannabinoids and ketamine) as a primary drug, with the proportion among all treated persons below 5 per cent in 14 countries. However, in three countries the proportion was around 10 per cent and in Oman, 28.5 per cent of treated persons reported NPS as their primary drug. A European project monitoring cases involving medical treatment for non-fatal overdoses found 6.2 per cent of cases to be related to NPS in the period 2014–2017, with the lowest values reported in 2017.[37] While deaths related directly to the use of NPS do occur, they were rare in the countries that were able to provide relevant data.[38]

On the other hand, harms to the individual caused by NPS can be significant.[39] At the individual level, health harms caused by NPS are of types similar to those observed in the case of controlled drugs and include dependence, transmission of infectious diseases and poisoning, including fatal overdoses.[40] Some NPS are injected more frequently than amphetamines or heroin, which further increases their potential to contribute to the spread of blood-borne infectious diseases.[41] Recent studies show suicidality and self-injurious behaviour were associated with some NPS, such as cathinones, synthetic cannabinoids and new synthetic opioids.[42] There have been attempts to standardize and compare the harms attributed to NPS with those attributed to controlled drugs,[43] but this remains an emerging field.

Regional and subregional trends in markets for new psychoactive substances

Use of several new psychoactive substances in the United States and in Western, Central and South-Eastern Europe has stabilized at lower levels

There is evidence, from various data sources, of NPS use in all regions of the world,[44] with certain NPS dominating in different regions.

As seen from the data presented above, there has been an overall decrease in NPS use in the United States and some countries of Western and Central Europe, after initial elevated levels of use. A stable situation or slight decrease in the use of NPS was observed among almost 100,000 high-school students aged 15–16 participating in a survey that had wider coverage of the European region. In 2019, the average prevalence of NPS use in the lifetime was almost identical in European boys and girls (3.4 per cent and 3.3 per cent, respectively) in 23 countries participating in the survey.[45]

The overall use of NPS does not seem to have been strongly affected by the COVID-19 pandemic in Western, Central and South-Eastern Europe, with participants in an online survey reporting both increased and decreased use during the pandemic in roughly equal numbers.[46]

Use of new psychoactive substances has been expanding to new regions

In some other regions and subregions, the availability and use of NPS appear to be emerging, even though evidence from trend data may be less available. Among the factors in this development is the relatively low cost of the new substances. For example, a 2015 study in India has highlighted the much lower street price of mephedrone, now under international control (150 Indian rupees/gram), as compared with cocaine (3,000 Indian rupees/gram).[47] This makes NPS attractive to

groups of users with lower available income, such as teenagers and marginalized groups.

Eastern Europe and Central Asia and Transcaucasia

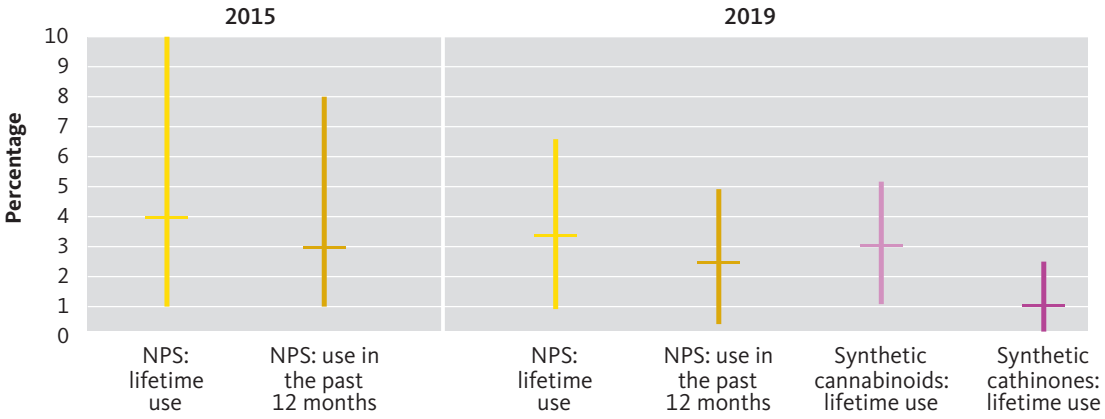
The spread of synthetic NPS has been particularly pronounced in the countries that used to form part of the former Soviet Union. Quantities of synthetic NPS seized in Eastern Europe and Central Asia and Transcaucasia reported to UNODC grew from 116 kg over the period 2005–2010 to almost 11 tons over the period 2015–2020. In contrast to other regions, the bulk of the synthetic NPS trafficked and seized in the period 2015–2020 in these subregions were synthetic cathinones (72 per cent), notably 4-methylephedrone, followed by metamfepramone (also known as dimethylcathinone), *alpha*-PVP and *alpha*-PHP, as well as synthetic cannabinoids (28 per cent).[48] Synthetic NPS and, notably, synthetic cathinones were traded across this region through the Hydra Market,[49] the largest Russian-language darknet market and one of the main darknet markets worldwide in recent years, until its shutdown in April 2022.[50]

There has also been some evidence of increasing NPS use in Eastern Europe and Central Asia and Transcaucasia[51]. The ease of availability from online shops has been cited as one of the reasons for this increase in Kazakhstan.[52] Since 2015, in Ukraine, NPS such as mephedrone (now under international control), MDVP and other synthetic cathinones have become more established, not only among people who inject drugs, but also among attendees of "techno" dance events and "rave" parties, a change also related to availability, including online sales.[53, 54] In Uzbekistan, a replacement of controlled drugs, such as opium and heroin, by NPS has been reported, possibly in relation to the COVID-19 pandemic.[55] Georgia also reported an increase in the use of NPS in the last decade (in particular between 2013 and 2014).[56]

South-East Asia and South Asia

NPS use has also been reported in other parts of Asia. South-East Asia, especially China, has a long-established ketamine market. Wastewater analysis studies from the period 2014–2018 detected decreased overall levels of ketamine consumption in 34 wastewater treatment plants in 25 cities in China.[57] In addition, other

FIG. 78 **Use of new psychoactive substances among young people aged 15–16, as reported in the European School Survey Project on Alcohol and Other Drugs, 2015 and 2019.**



Sources: ESPAD Group (2020), ESPAD Report 2019: Results from the European School Survey Project on Alcohol and Other Drugs, EMCDDA Joint Publications, Publications Office of the European Union, Luxembourg, and ESPAD Group (2016), ESPAD Report 2015: Results from the European School Survey Project on Alcohol and Other Drugs, Publications Office of the European Union, Luxembourg.

Note: Horizontal lines represent central estimate for all countries participating at the ESPAD survey, while vertical lines represent the span from the country with lowest reported prevalence to the country with highest reported prevalence.

data sources suggest that, in recent years, the market for ketamine for non-medical use, which is mostly manufactured illicitly, has decreased in China. On the other hand, in other countries of South-East Asia, a continuing expansion of the ketamine market since 2015 may be taking place. Similar trends are reflected in data from drug treatment and police registers. While in China, the number of registered ketamine users continued to decline (from 236,000 users in 2015 to 41,100 users in 2020), in Thailand, admissions into treatment for ketamine use disorders increased from 51 in 2014 to 1,093 in 2019.[58] However, those patients constituted only a small proportion of the people in drug treatment overall, less than 1 per cent in Thailand, Cambodia, the Philippines and Singapore because most people were in drug treatment for other drug use disorders.[59] Furthermore, data based on the perceptions of experts and on drug treatment admissions suggest an increase in the use of ketamine between 2017 and 2020 in Cambodia.[60]

Other NPS are also used and are likely on the rise in South-East Asia. In Indonesia, recent sharp increases in seizures of domestically manufactured synthetic cannabinoids, MMB-FUBINACA and/or AB-CHMINACA, sprayed onto tobacco, locally known as "tembakau gorila" ("gorilla tobacco") were observed.[61] Use of these substances was also reported[62] but there are no epidemiological data to indicate the level of use, apart from drug treatment data. According to this data, almost 2,000 treated persons in 2020, or about 8 per cent of all people in drug treatment, reported synthetic cannabinoids as their primary drug. In Singapore, people who use NPS constituted the second largest group after methamphetamine users among those brought into formal contact with the police. It is not clear which NPS were involved, but seizures of synthetic cannabinoids have increased sharply over the last five years.[63]

In Thailand, a common plant-based NPS used is kratom, with sizeable representation in drug treatment, being the third most common primary drug in drug treatment in 2019 and the fourth most common one in 2020. However, a gradual decrease from almost 7,000 people in drug treatment to less than 3,000 between 2017 and 2020 has been observed, which suggests that the use of kratom may be in decline.[64]

In Taiwan Province of China, an analysis of data from multiple indicators has shown that, while ketamine use declined after peaking in the period 2013–2015, the use of some other new psychoactive substances, detected in drug treatment for the first time in 2014, has recently increased sharply.[65]

Recent data are not available for India, but earlier studies testified to the presence of mephedrone in the country's metropolitan cities, where it was often used by young users. For example, 8 out of 10 drug users in Mumbai, were reported to have used the relatively inexpensive drug in 2011.[66] In addition, since 2006, the use of ketamine in the form of pills containing a locally unique mixture with cocaine called "CK1" (with the street names "blizzard" and "Calvin Klein") has been reported in the party scene in Goa.[67]

South and Central America

A recent trend in South and Central America and the Caribbean is the emergence of papers ("stamps") blotted with various NPS with hallucinogenic effects.[68] El Salvador, Uruguay, Chile, and Brazil have recorded such developments and Argentina and Colombia have reported the detection of similar compounds.[69] The relatively high proportion of NPS with hallucinogenic effects on the drug market is a peculiarity of these subregions.[70] Many of these NPS are marketed as LSD.[71]

Several countries in the region recently recorded the emergence of "pink cocaine", a drug typically containing 2C-B, and sometimes also MDMA, cocaine, ketamine or other NPS. Contrastingly, in Chile, drugs marketed as 2C-B were found to contain no 2C-B but to contain other compounds, mostly ketamine and some controlled drugs (cocaine hydrochloride or MDMA).[72] Ketamine has also been reported as an NPS of concern by Costa Rica and other countries in South and Central America, where its use has been reported and seizures of the substance are on the rise in several countries.[73]

In Chile, the only country in the region for which data on the annual prevalence of the use of synthetic cannabinoids (locally known as "synthetic marijuana") among the general population are available, the annual prevalence increased from 0.5 per cent in 2014 to 1.1 per cent in 2018. In Bolivia (Plurinational State

of), Colombia, Ecuador and Peru, data indicate that the lifetime prevalence of the use of synthetic cannabinoids among university students ranged between 0.5 per cent (Peru) and 4.2 per cent (Colombia) in 2016.[74] Data from urine screening tests conducted during a music festival in Uruguay in 2015 showed that 11 per cent of the samples taken contained synthetic cannabinoids.[75] Synthetic cannabinoids are also likely used in penitentiaries in Brazil. For example, prison authorities in São Paulo, Brazil, intercepted 1,821 attempts to smuggle a synthetic cannabinoid product labelled "K4" into prisons in 2019.[76,77] The first data on NPS consumption in Brazil based on analysis of oral fluid samples collected at parties and electronic music festivals showed that ketamine (29.4 per cent), methylone (6.1 per cent), and *N*-ethylpentylone (4.1 per cent) were the most prevalent NPS in the 462 samples collected between September 2018 and January 2020. Although 39.2 per cent of the samples were positive for NPS, only 5 per cent of the 462 volunteers reported having consumed NPS.[78]

Africa

The use of NPS is likely also on the rise in Africa, as documented by a number of media reports, however, relevant epidemiological data are extremely scarce. A small-scale study of a clinical sample of people with acute or chronic synthetic cannabinoid toxicity documented the use of synthetic cannabinoids among males, mostly young (two thirds of the sample were aged 15–35) in Egypt.[79] Egypt also reported that 2,475 persons in treatment for drug use disorders in 2020, or approximately 10 per cent of people in drug treatment, cited NPS, mostly synthetic cannabinoids, as their primary drug. In Nigeria, there are anecdotal reports of the use of various unconventional mixtures of substances of natural origin, misused pharmaceuticals, or synthetic drugs, sometimes including NPS,[80] however, supporting epidemiological data are lacking. In South Africa, the use of mephedrone was detected through wastewater analysis in 2018.[81] It is likely that synthetic cannabinoids are also present in the country, however, evidence is sparse, with some laboratory-confirmed cases reported in the province of Guateng and in Pretoria in 2018, and suspected cases in Durban in 2020.[82]

References

1 UNODC, *The Challenge of New Psychoactive Substances: A Report from the Global SMART Programme*, 2013.

2 Abu Shafi et al., "New Psychoactive Substances: A Review and Updates," *Therapeutic Advances in Psychopharmacology* 10 (January 2020): 204512532096719, https://doi.org/10.1177/2045125320967197.

3 UNODC, *World Drug Report 2021, Booklet 2, Global Overview: Drug Demand, Drug Supply.* (United Nations publication, 2021), 2.

4 UNODC Early Warning Advisory (EWA) on NPS, "March 2022 – UNODC EWA: Stimulants Were the Largest Groups of Newly Emerging Substances in 2021," accessed March 14, 2022, https://www.unodc.org/LSS/Announcement?type=NPS.

5 For interactive figures on the geographical spread of NPS, see www.unodc.org/unodc/en/scientists/ewa/data.html.

6 Marie Claire Van Hout et al., "Health and Social Problems Associated with Recent Novel Psychoactive Substance (NPS) Use Amongst Marginalised, Nightlife and Online Users in Six European Countries," *International Journal of Mental Health and Addiction* 16, no. 2 (April 2018): 480–95, https://doi.org/10.1007/s11469-017-9824-1.

7 EMCDDA, *Synthetic Cannabinoids in Europe: A Review.* (LU: Publications Office, 2021), https://data.europa.eu/doi/10.2810/911833.

8 Shafi et al., "New Psychoactive Substances."

9 L. Bijlsma et al., "Perspectives and Challenges Associated with the Determination of New Psychoactive Substances in Urine and Wastewater – A Tutorial," *Analytica Chimica Acta* 1145 (February 2021): 132–47, https://doi.org/10.1016/j.aca.2020.08.058.

10 Luke Gent and Richard Paul, "The Detection of New Psychoactive Substances in Wastewater. A Comprehensive Review of Analytical Approaches and Global Trends," *Science of The Total Environment* 776 (July 2021): 146028, https://doi.org/10.1016/j.scitotenv.2021.146028; Bijlsma et al., "Perspectives and Challenges Associated with the Determination of New Psychoactive Substances in Urine and Wastewater – A Tutorial"; Sara Castiglioni et al., "New Psychoactive Substances in Several European Populations Assessed by Wastewater-Based Epidemiology," *Water Research* 195 (May 2021): 116983, https://doi.org/10.1016/j.watres.2021.116983.

11 Paula Brandeburová et al., "Wastewater-Based Epidemiology to Assess the Occurrence of New Psychoactive Substances and Alcohol Consumption in Slovakia," *Ecotoxicology and Environmental Safety* 200 (September 2020): 110762, https://doi.org/10.1016/j.ecoenv.2020.110762.

12 John R.H. Archer et al., "Evaluation of Long-term Detection Trends of New Psychoactive Substances in Pooled Urine from City Street Portable Urinals (London, UK)," *British Journal of Clinical Pharmacology* 86, no. 3 (March 2020): 517–27, https://doi.org/10.1111/bcp.14239.

13 Camille Richeval et al., "New Psychoactive Substances in Oral Fluid of Drivers around a Music Festival in South-West France in 2017," *Forensic Science International* 297 (April 2019): 265–69, https://doi.org/10.1016/j.forsciint.2019.02.029.

14 Damien Rhumorbarbe et al., "Monitoring New Psychoactive Substances: Exploring the Contribution of an Online Discussion Forum," *International Journal of Drug Policy* 73 (November 2019): 273–80, https://doi.org/10.1016/j.drugpo.2019.03.025.

15 EMCDDA, *European Drug Report 2021: Trends and Developments* (Luxembourg: Publications Office of the European Union, 2021).

16 Ibid.

17 For the latest scheduling decisions see United Nations, Commission on Narcotic Drugs, Report on the sixty-fourth session, Official Records, 2021, Supplement No. 8 (E.2021/28; E/CN.7/2021/10), and previous years.

18 United Nations, *Commission on Narcotic Drugs Report on the Sixty-Fourth Session*, Official Records, 2021; Supplement No. 8, (E/2021/28 E/CN.7.2021/10), 2021 and previous years.

19 UNODC early warning advisory on new psychoactive substances.

20 Ibid.

21 Ibid.

22 UNODC, *Fentanyl and Its Analogues - 50 Years On*, vol. 17, Global SMART Update (Vienna, 2017).

23 UNODC, *Current NPS Threats, Volume III*, (Vienna, October 2020).

24 UNODC, *Global Synthetic Drugs Assessment 2020* (Vienna, November 2020).

25 UNODC, responses to the annual report questionnaire, n.d.

26 Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health* (Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, 2021).

27 Castiglioni et al., "New Psychoactive Substances in Several European Populations Assessed by Wastewater-Based Epidemiology."

28 D. Lloyd Johnston et al., *Monitoring the Future National Survey Results on Drug Use 1975-2021: Overview, Key Findings on Adolescent Drug Use.* (Michigan: Ann Arbor: Institute for Social Research, University of Michigan, 2022).

29 EMCDDA, *Synthetic Cannabinoids in Europe*.

30 Van Hout et al., "Health and Social Problems Associated with Recent Novel Psychoactive Substance (NPS) Use Amongst Marginalised, Nightlife and Online Users in Six European Countries."

31 Ibid.

32 EMCDDA, *Synthetic Cannabinoids in Europe*.

33 Róbert Csák et al., "New Psychoactive Substance Use as a Survival Strategy in Rural Marginalised Communities in Hungary," *International Journal of Drug Policy* 85 (November 2020): 102639, https://doi.org/10.1016/j.drugpo.2019.102639.

34 Ibid.

35 UNODC, *World Drug Report 2021, Booklet 2, Global Overview: Drug Demand, Drug Supply.*, 2.

36 Axel J. Adams et al., "'Zombie' Outbreak Caused by the Synthetic Cannabinoid AMB-FUBINACA in New York," *New England Journal of Medicine* 376, no. 3 (January 19, 2017): 235–42, https://doi.org/10.1056/NEJMoa1610300; Amelia M. Kasper et al., "Severe Illness Associated with Reported Use of Synthetic Cannabinoids

— Mississippi, April 2015," *MMWR. Morbidity and Mortality Weekly Report* 64, no. 39 (October 9, 2015): 1121–22, https://doi.org/10.15585/mmwr.mm6439a7; Michael D. Schwartz et al., "A Common Source Outbreak of Severe Delirium Associated with Exposure to the Novel Synthetic Cannabinoid ADB-PINACA," *The Journal of Emergency Medicine* 48, no. 5 (May 2015): 573–80, https://doi.org/10.1016/j.jemermed.2014.12.038; Vadim Shevyrin et al., "Identification and Analytical Characteristics of Synthetic Cannabinoids with an Indazole-3-Carboxamide Structure Bearing a N-1-Methoxycarbonylalkyl Group," *Analytical and Bioanalytical Chemistry* 407, no. 21 (August 2015): 6301–15, https://doi.org/10.1007/s00216-015-8612-7; Yuri P. Springer et al., "Increase in Adverse Reactions Associated with Use of Synthetic Cannabinoids — Anchorage, Alaska, 2015–2016," *MMWR. Morbidity and Mortality Weekly Report* 65, no. 40 (October 14, 2016): 1108–11, https://doi.org/10.15585/mmwr.mm6540a4; Jordan Trecki, Roy R. Gerona, and Michael D. Schwartz, "Synthetic Cannabinoid–Related Illnesses and Deaths," *New England Journal of Medicine* 373, no. 2 (July 9, 2015): 103–7, https://doi.org/10.1056/NEJMp1505328; Joseph A. Tyndall et al., "An Outbreak of Acute Delirium from Exposure to the Synthetic Cannabinoid AB-CHMINACA," *Clinical Toxicology* 53, no. 10 (November 26, 2015): 950–56, https://doi.org/10.3109/15563650.2015.1100306.

37 EMCDDA, *Drug-Related Hospital Emergency Presentations in Europe: Update from the Euro DEN Plus Expert Network: Technical Report*. (LU: Publications Office, 2020), https://data.europa.eu/doi/10.2810/092447.

38 UNODC, responses to the annual report questionnaire; Fabio Vaiano, Jennifer P. Pascali, and Elisabetta Bertol, "New Psychoactive Substances: An Actual Problem or an Overestimated Phenomenon?," *Forensic Science International* 304 (November 2019): 109941, https://doi.org/10.1016/j.forsciint.2019.109941.

39 UNODC, *World Drug Report 2021, Booklet 2, Global Overview: Drug Demand, Drug Supply.*

40 Ibid.

41 Róbert Csák and József Rácz, "Risk Behaviours of NPS Users in Hungary and the Possibility of Harm Reduction," *Medycyna Rodzinna* 21, no. 1 (March 2018), https://doi.org/10.25121/MR.2018.21.1.93.

42 Stefania Chiappini et al., "New Psychoactive Substances and Suicidality: A Systematic Review of the Current Literature," *Medicina* 57, no. 6 (June 6, 2021): 580, https://doi.org/10.3390/medicina57060580.

43 Leslie A King and John M Corkery, "An Index of Fatal Toxicity for New Psychoactive Substances," *Journal of Psychopharmacology* 32, no. 7 (July 2018): 793–801, https://doi.org/10.1177/0269881118754709.

44 UNODC, *Current NPS Threats. Volume IV*, 2021; Shijia Chan, Jiahao Wu, and Belinda Lee, "Fatalities Related to New Psychoactive Substances in Singapore—A Case Series," *Forensic Science International* 304 (November 2019): 109892, https://doi.org/10.1016/j.forsciint.2019.109892; Ling-Yi Feng and Jih-Heng Li, "New Psychoactive Substances in Taiwan: Challenges and Strategies," *Current Opinion in Psychiatry* 33, no. 4 (July 2020): 306–11, https://doi.org/10.1097/YCO.0000000000000604; Basma Damiri et al., "Drug Use and Possession, Emerging of New Psychoactive Substances in the West Bank, Palestine," *Egyptian Journal of Forensic Sciences* 8, no. 1 (December 2018): 42, https://doi.org/10.1186/s41935-018-0074-6; Eliza Kurcevič and Rick Lines, "New Psychoactive Substances in Eurasia: A Qualitative Study of People Who Use Drugs and Harm Reduction Services in Six Countries," *Harm Reduction Journal* 17, no. 1 (December 2020): 94, https://doi.org/10.1186/s12954-020-00448-2; Rachel Sutherland, Steve Allsop, and Amy Peacock, "New Psychoactive Substances in Australia: Patterns and Characteristics of Use, Adverse Effects, and Interventions to Reduce Harm," *Current Opinion in Psychiatry* 33, no. 4 (July 2020): 343–51, https://doi.org/10.1097/YCO.0000000000000606.

45 EMCDDA, "ESPAD Report 2019: Results from the European School Survey Project on Alcohol and Other Drugs" (Luxembourg: Publications Office of the European Union, 2020), http://www.espad.org/espad-report-2019#downloadReport.

46 EMCDDA, "European Web Survey on Drugs 2021: Top Level Findings, 21 EU Countries and Switzerland," December 15, 2021, https://www.emcdda.europa.eu/publications/data-fact-sheets/european-web-survey-drugs-2021-top-level-findings-eu-21-switzerland_en; EMCDDA, "European Web Survey on Drugs 2021: Top Level Findings in the Western Balkans," Data Fact Sheets, December 15, 2021.

47 Kranti Kadam, "New Psychoactive Substances: An Emerging Epidemic," *Annals of Indian Psychiatry* 3, no. 2 (2019): 86, https://doi.org/10.4103/aip.aip_57_19.

48 UNODC, responses to the annual report questionnaire.

49 "Germany Shuts down Darknet Platform Used for Drugs Sales," *Euronews*, April 5, 2022, sec. news_news, https://www.euronews.com/2022/04/05/hydra-market-germany-shuts-down-darknet-platform-used-for-drugs-sales.

50 UNODC, "UNODC Analysis Based on Dark Web Data (See Online Methodological Annex)," 2022.

51 Kurcevič and Lines, "New Psychoactive Substances in Eurasia."

52 Zhanna Kassymova, "New Psychoactive Substances in the Republic of Kazakhstan," *Press Center of the Ministry of Justice of the Republic of Kazakhstan*, May 14, 2021, https://www.gov.kz/memleket/entities/adilet/press/article/details/49041?lang=ru.

53 UNODC, "The short history of new psychoactive substances in Ukraine" 2020.

54 Zhanna Kassymova, "New Psychoactive Substances in the Republic of Kazakhstan," *Press Center of the Ministry of Justice of the Republic of Kazakhstan*, May 14, 2021, https://www.gov.kz/memleket/entities/adilet/press/article/details/49041?lang=ru.

55 Eurasian Harm Reduction Association, "Uzbekistan," EHRA, accessed June 13, 2022, https://harmreductioneurasia.org/countries/uzbekistan/.

56 Eurasian Harm Reduction Association, Swansea University, *New Psychoactive Substance Use in the Republic of Georgia: Research Results.* (Beselia, Ada.: EHRA: Vilnius, Lithuania, 2020).

57 Si-Yu Liu et al., "Tracing Consumption Patterns of Stimulants, Opioids, and Ketamine in China by Wastewater-Based Epidemiology," *Environmental Science and Pollution Research* 28, no. 13 (April 2021): 16754–66, https://doi.org/10.1007/s11356-020-12035-w.

58 UNODC, *Synthetic Drugs in East and Southeast Asia. Latest Developments and Challenges* (Global Synthetics Monitoring: Analyses, Reporting and Trends (SMART) Programme, Laboratory and Scientific Service with the support of the UNODC Regional Office for Southeast Asia and the Pacific, 2021).

59 Ibid.

60 Ibid.

61 Ibid.

62 Zaen Musyrifin and Nur Arifin Setiawan, "Self Defense Mechanism

Sebagai Strategi Bimbingan Mental Spiritual Bagi Pecandu Narkoba Tembakau Gorilla," *Al-Isyraq: Jurnal Bimbingan, Penyuluhan, Dan Konseling Islam* 3, no. 1 (2020): 1–16.

63 UNODC, *Synthetic Drugs in East and Southeast Asia. Latest Developments and Challenges*.

64 Ibid.

65 Wen-Jing Yu, Linda B Cottler, and Jih-Heng Li, "New Psychoactive Substances in Taiwan: The Current Situation and Initiative for Rational Scheduling," *Journal of Food and Drug Analysis* 29, no. 1 (March 15, 2021): 168–81, https://doi.org/10.38212/2224-6614.3225.

66 Kadam, "New Psychoactive Substances."

67 Ibid.

68 UNODC, *Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean 2021* (Vienna: Global SMART Programme, 2021).

69 Ibid.

70 *Global SMART Newsletter for Latin America and the Caribbean, Issue No. 9*, 2021.

71 Inter-American Drug Abuse Control Commission (CICAD), Organization and of American States (OAS), *Report on Drug Use in the Americas 2019* (Washington D.C: Organization of American States, 2019).

72 UNODC, *Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean 2021*.

73 Ibid.

74 Ibid.

75 Observatorio Uruguayo de Drogas, Sistema de Alerta and Temprana, *Informe Especial: Cannabinoides Sintéticos* (Montevideo, 2017).

76 UNODC, *Synthetic Drugs and New Psychoactive Substances in Latin America and the Caribbean 2021*.

77 César Galvão, "Polícia Científica de SP Começa a Fazer Laudos Que Identificam Drogas Sintéticas," *Globo.Com*, August 14, 2020, https://g1.globo.com/sp/sao-paulo/noticia/2020/08/14/policiacientifica-de-sp-comeca-a-fazer-laudos-que-identificam-drogassinteticas.ghtml.

78 Kelly Francisco da Cunha et al., "Prevalence of New Psychoactive Substances (NPS) in Brazil Based on Oral Fluid Analysis of Samples Collected at Electronic Music Festivals and Parties," *Drug and Alcohol Dependence* 227 (October 2021): 108962, https://doi.org/10.1016/j.drugalcdep.2021.108962.

79 Wafaa M. Abdelmoneim et al., "Clinical Pattern of Synthetic Cannabinoids Users in Upper Egypt: Cross-Sectional Study," *Middle East Current Psychiatry* 29, no. 1 (December 2022): 24, https://doi.org/10.1186/s43045-022-00188-y.

80 Emeka W. Dumbili, Ikenna D. Ebuenyi, and Kenneth C. Ugoeze, "New Psychoactive Substances in Nigeria: A Call for More Research in Africa," *Emerging Trends in Drugs, Addictions, and Health* 1 (2021): 100008, https://doi.org/10.1016/j.etdah.2021.100008.

81 E. Archer et al., "Wastewater-Based Epidemiology and Enantiomeric Profiling for Drugs of Abuse in South African Wastewaters," *Science of The Total Environment* 625 (June 2018): 792–800, https://doi.org/10.1016/j.scitotenv.2017.12.269.

82 Richard Chelin, "New Wiz Drug Targets South Africa's Youth," *Institute for Security Studies* (blog), July 21, 2020, https://issafrica.org/iss-today/new-wiz-drug-targets-south-africas-youth.

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants controlled under the Convention on Psychotropic Substances of 1971 and from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues).

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine.

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage.

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride).

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking.

cocaine salt — cocaine hydrochloride.

drug use — use of controlled psychoactive substances for non-medical and non-scientific purposes, unless otherwise specified.

fentanyls — fentanyl and its analogues.

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available.

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin.

opioids — a generic term that refers both to opiates and their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body.

problem drug users — people who engage in the high-risk consumption of drugs. For example, people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the Diagnostic and Statistical Manual of Mental Disorders (fifth edition) of the American Psychiatric Association, or the International Classification of Diseases and Related Health Problems (tenth revision) of WHO.

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. Harmful use of substances and dependence are features of drug use disorders. People with drug use disorders need treatment, health and social care and rehabilitation.

harmful use of substances — defined in the International Statistical Classification of Diseases and Related Health Problems (tenth revision) as a pattern of use that causes damage to physical or mental health.

dependence — defined in the International Statistical Classification of Diseases and Related Health Problems (tenth revision) as a cluster of physiological, behavioural and cognitive phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

substance or drug use disorders — referred to in the Diagnostic and Statistical Manual of Mental Disorders (fifth edition) as patterns of symptoms resulting from the repeated use of a substance despite experiencing problems or impairment in daily life as a result of using substances. Depending on the number of symptoms identified, substance use disorder may be mild, moderate or severe.

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once a person develops a drug use disorder, treatment, care and rehabilitation are needed.

REGIONAL GROUPINGS

The *World Drug Report* uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

AFRICA

- East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania and Mayotte
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia
- Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe and Reunion
- West and Central Africa: Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo and Saint Helena

AMERICAS

- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Anguilla, Aruba, Bonaire, Netherlands, British Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Netherlands, Sint Eustatius, Netherlands, Sint Maarten, Turks and Caicos Islands and United States Virgin Islands
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- North America: Canada, Mexico, United States of America, Bermuda, Greenland and Saint-Pierre and Miquelon
- South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Republic of) and Falkland Islands (Malvinas)

ASIA

- Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
- East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste, Viet Nam, Hong Kong, China, Macao, China, and Taiwan Province of China
- South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan
- Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen and State of Palestine
- South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka

EUROPE

- Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine

- South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, Serbia, Türkiye[a] and Kosovo[b]
- Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Faroe Islands. Gibraltar and Holy See

OCEANIA

- Australia and New Zealand: Australia and New Zealand
- Polynesia: Cook Islands, Niue, Samoa, Tonga, Tuvalu, French Polynesia, Tokelau and Wallis and Futuna Islands
- Melanesia: Fiji, Papua New Guinea, Solomon Islands, Vanuatu and New Caledonia
- Micronesia: Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Guam and Northern Mariana Islands

a Further to the communication dated 31 May 2022 from the permanent mission addressed to the Executive Office of the Secretary-General, the country name was changed from the former name of the Republic of Turkey (former short form: Turkey), with immediate effect. The *World Drug Report 2022* was prepared before that date and thus uses the former name in its reporting and analysis, except for the maps that were finalized more recently.

b References to Kosovo shall be understood to be in the context of Security Council resolution 1244 (1999).

UNODC
United Nations Office on Drugs and Crime

Vienna International Centre, PO Box 500, 1400 Vienna, Austria
Tel: +(43) (1) 26060-0, Fax: +(43) (1) 26060-5866, www.unodc.org

UNODC Research

Consisting of five separate booklets, the *World Drug Report 2022* provides an in-depth analysis of global drug markets and examines the nexus between drugs and the environment within the bigger picture of the Sustainable Development Goals, climate change and environmental sustainability.

Booklet 1 summarizes the four subsequent booklets by reviewing their key findings and highlighting policy implications based on their conclusions. Booklet 2 provides an overview of the global demand for and supply of drugs, including an analysis of the relationship between illicit drug economies and situations of conflict and weak rule of law. Booklet 3 reviews the latest trends in the global markets for opioids and cannabis at the global and regional levels, and includes a discussion of the potential impact of changes in opium poppy cultivation and opium production in Afghanistan, and an analysis of early indications of the impact of cannabis legalization on public health, public safety, market dynamics and criminal justice responses in selected jurisdictions. Booklet 4 presents the latest trends in and estimates of the markets for various stimulants – cocaine, amphetamines and "ecstasy" – and new psychoactive substances, both at the global level and in the most affected subregions, including an analysis of different coca bush eradication strategies and a focus on the expansion of the methamphetamine market in South-West Asia. Booklet 5 delves into the nexus between drugs and the environment, providing a comprehensive overview of the current state of research into the direct and indirect effects of illicit drug crop cultivation and drug manufacture, as well as drug policy responses on the environment.

The *World Drug Report 2022* is aimed not only at fostering greater international cooperation to counter the impact of the world drug problem on health, governance and security, but also, with its special insights, at assisting Member States in anticipating and addressing threats from drug markets and mitigating their consequences.

The accompanying statistical annex is published on the UNODC website:
www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html

ISBN: 9789211483758